The
IRON AGE
...ents p. 2 THE NATIONAL METALWORKING WEEKLY September 8, 1949

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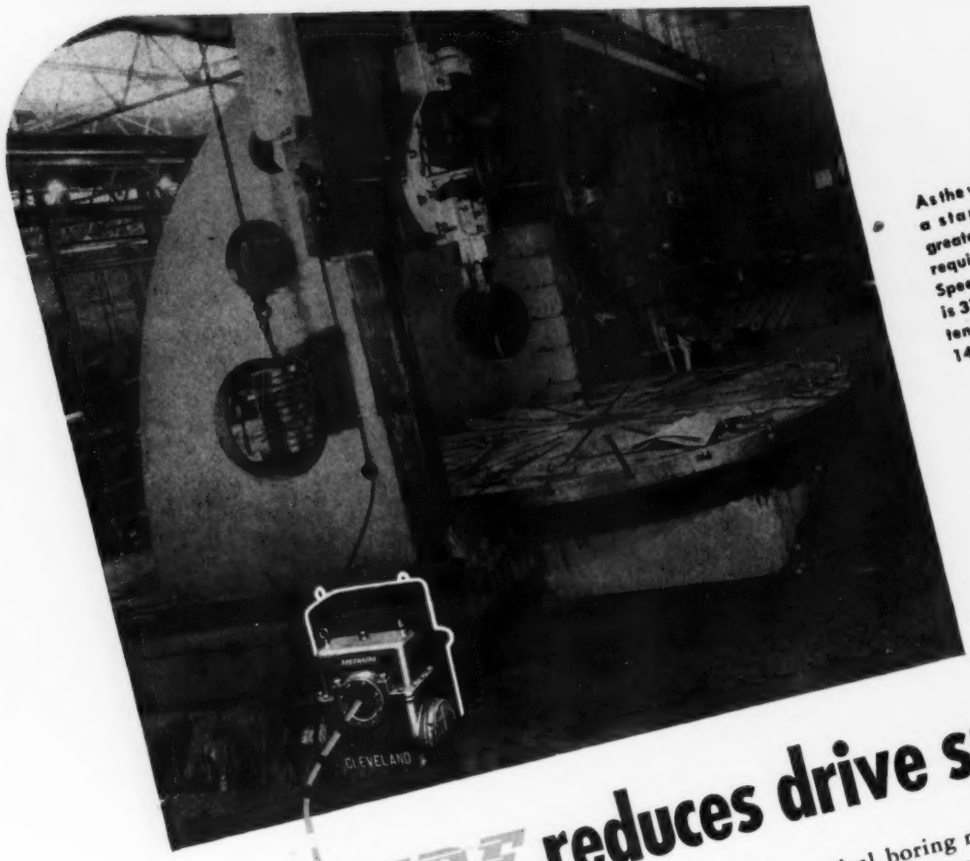

As the white outline indicates, a standard unit of much greater frame size would be required to do the work of Speedaire. In fact, Speedaire is 37.2% smaller in cubic content, 12% lighter in weight and 14.5% lower in initial cost.

Photo by courtesy of R. C. Mahon Co., Detroit

SPEEDAIRE reduces drive space 97%

THE drive formerly used on this vertical boring mill was a series of belts, pulleys and jack shafts. It took up more space than the mill itself and interfered with moving materials into and out of the machine. The new drive, the small, but powerful Speedaire in the lower left foreground, occupies less than 3% of the old drive space.

Speedaire is Cleveland's fan-cooled worm-gear speed reducer. Because it is fan-cooled, it does more work . . . will deliver up to *double the horsepower* of standard worm units of equal frame size, at usual motor speeds. It can be installed economically on many applications where other types have been used heretofore—giving you the advantage of a compact right-angle drive. Speedaire gives the same long, trouble-free service characteristic of all Clevelands.

For full description, send for Catalog 300. The Cleveland Worm & Gear Co., 3252 East 80th St., Cleveland 4, Ohio.

Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers, Limited.

CLEVELAND
Worm Gear
Speed Reducers

A PLUS FROM US TO YOU

Something extra . . . with no strings attached?

Yes indeed. We've been doing it for years, too—rough-machining our rolled-and-forged circular blanks, so that the customer won't have to do it himself in his own plant. A little thing, yes—but this extra feature is one indication of the fine overall workmanship you'll find in these products.

Bethlehem circular steel blanks have a multitude of end uses. Here are a few: spur, bevel, and miter gears; crane wheels; turbine rotors; flywheels; industrial wheels; sheave wheels; tire molds and rings, etc. They're exceptionally good for such applications, because they're strong—very strong—and they'll stand a lot of grief.

At Bethlehem, blanks of this kind are made in a mill that combines the steps of upsetting, forging, and rolling. It's a method that imparts homogeneity, good grain structure, nice surface characteristics. Because of their high strength, the blanks can often be used in thinner sections, thus saving weight. Sizes range from approximately 10 in. to 42 in., OD. You have your choice of carbon or alloy steel, and your order can be heat-treated or untreated, as you wish. And pardon if we repeat—the blanks all reach you beautifully rough-machined! For further details, including many pictures of actual applications, ask for a copy of Booklet 216.

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Bethlehem Pacific Coast Steel Corporation
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BETHLEHEM STEEL

BETHLEHEM ROLLED-AND-FORGED CIRCULAR PRODUCTS

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SEPTEMBER 8, 1949 • • • VOL. 164, No. 10

Editorial

Lest We Forget! 7

News Interpretations

Newsfront 11
The Iron Age Summary 15
Global Letter 30
Machine Tool Highspots 34
On the Assembly Line 42
West Coast Progress Report 50
The Federal View 57

Special Features

Fatigue Cracks 22
Iron Age Introduces 24
Free Publications 36
New Production Ideas 37
The Economic Side, J. S. Lawrence 110
Dear Editor 150

Technical Articles

Press Fit Seals for Ball and Roller Bearings 69
Quality Extras—and Why 75
A Graphite Nodulizing Alloy 78
New Metallizing Techniques 81
New Books 84
Gas Fired Annealing Furnace for RR Tank Cars 85
Buick Tooling for Small Part Production 87

Spot News of Industry

Truck Freight Rate Boost Likely on Steel 101
Steel Labor Fact Finding Is Immense Job 103
Industry Shorts 104
Tito's Economy Swings Toward the West 107
Dates to Remember 107
Advocates Loans for Taconite Research 109

Markets & Prices

Market Briefs and Bulletins 127
Nonferrous Metals Outlook 130
Nonferrous Prices 131
Iron and Steel Scrap Market 132
Iron and Steel Scrap Prices 134
Comparison of Prices 136
Steel Prices 138
Pipe and Tubing Prices 139
Alloy Steel Prices 140
Warehouse Steel and Pig Iron Prices 141
Ferroalloy Prices 142

Index to Advertisers 184
Dear Customer 185

Editorial

INDUSTRY VIEWPOINTS

Lest We Forget!

REMEMBER about 9 months ago when the government was going into the steel business? And when steel people said it wasn't necessary? That the industry had enough capacity?

Thank God the industry was right. But how close the lets-put-the-government-in-business boys came to putting their foot in the door of a basic industry.

Let's not be complacent. Steel men must be sure their plant is in good shape. That it is expanded along with demand. If they don't they will be targets again. The boys are still in the back room waiting for another chance. Don't let them get it.

Tom C. Campbell

Editor

There's Nothing Else Like It: USERS GAIN IN PRODUCTION

FORTY-EIGHT per cent savings — floor-to-floor time! That's the actual result on this job — milling the face of worm-wheel housings. *Mono-Lever controlled* reciprocal milling did the trick. Operator determined cycle and set trip dogs — a matter of seconds. Then using the speedy setup and workholding facilities of the Built-in Chucking Table (a new, exclusive Kearney & Trecker development for simplifying setups and for easy holding of irregular shaped workpieces) he made his setup. Then engaged the *Mono-Lever* — and kept busy loading new workpieces.

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NEWSFRONT

NEWS, METHODS AND PRODUCT FORECAST

► Nonferrous castings of complicated shape are now being made by a newly perfected plaster core process which gives close as-cast tolerances, good surface smoothness and minimizes machining. Shrouded high speed impellers, aircraft landing wheels and torque converter turbine units are among parts successfully produced by this method.

► A new pilot plant started last week in Minnesota to produce iron powder by reduction of iron-bearing slate in 14 separate operations. Its sponsors claim the result is a high grade product with greater green strength than some sintering grades now on the market.

► Development of a new hermetically sealed spray pickling machine is reported to reduce pickling time to a third that of former methods. The new continuous process is said to increase processing efficiency at each stage and to prevent loss of active chemical. The ventilation problem has been reduced to a minimum, it is claimed.

► An anvil casting weighing about 50,000 lb with feeding head has been cast in modular iron. The piece, now cooling, will finish at about 40,000 lb, the largest yet produced in the new magnesium treated cast iron. Heretofore the part has been cast in steel.

► Two divergent trends are now at work in the machine tool industry. The accuracy, speed and versatility of some tools is being stepped up to meet customer demand. At the same time, to meet a more price conscious market, some tool costs are being lowered by cutting down on some of the operational flexibility not needed by some users.

► Chambers of commerce, power companies and similar organizations that survey industrial sites for potential users report an upswing in requests for information on small town plant sites. Many of these surveys are apparently proving useful in bringing recalcitrant unions into line.

► Induction heating of cast iron V-ways permits holding distortion to as little as 0.004 to 0.006 in. over a 6-ft length. Fast heat and quench cycles practically eliminate scale formation.

► A formula has reportedly been perfected for spray-applied paint removers so that the basic problem has been licked — the mixture will stand up in storage. Paint can be removed from an airplane in half a day with the new mix, the U. S. Dept. of Commerce says.

► Just a few months ago the Soviet-dominated press in the Russian zone of Germany announced that Russia was willing to supply the zone with five rolling mills for immediate shipment. Erection didn't take long either. Omitted from the original announcement was the fact that they were merely returning mills they seized some time ago. Thus Riesa got back its own tube mill, Groditz its tire mill, Hennigsdorf its bar mill and Kirchmoser its own plate mill.

► Duplexing operations were halted in some steel melting shops when good scrap became available at $20 to $25 a ton. Now that scrap prices are rising these operators may return to duplexing if the scrap price exceeds the cost of making and using blast furnace hot metal.

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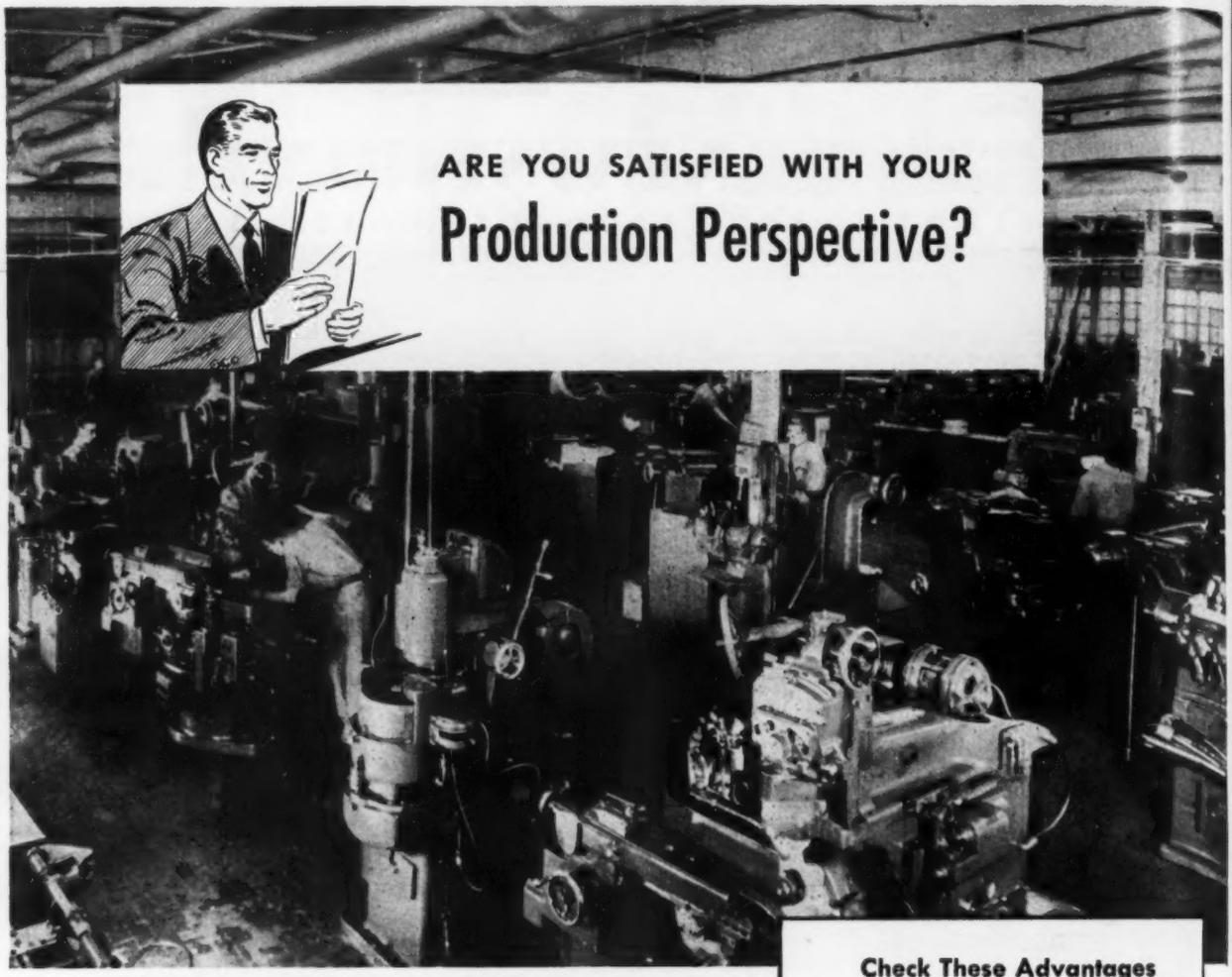

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Perspective is defined as the "capacity to view things in their true relation or relative importance." Therefore, *Production Perspective* is the capacity to view each phase of production—from planning to completion—in its true relation to all other phases.

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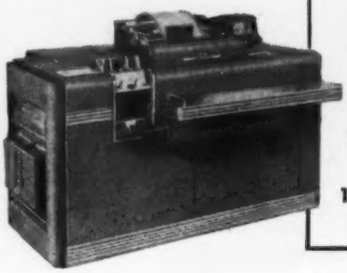

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World Headquarters Building, 590 Madison Ave., New York 22, N.Y.

Steel Scrap Market Is Explosive

Labor Problems Coming to Head

Steel Demand Is Holding Firm

The Iron Age SUMMARY

IRON AND STEEL INDUSTRY TRENDS

THE steelmaking scrap market has turned hectic. Although most mills have not come into the open market for big tonnages the market is more disorganized this week than it has been since 1948. Mills are reaching out of their own districts for tonnages that deliver at prices that would have been called fantastic a few weeks ago.

Many mill bids on scrap from big manufacturing plants are at least 50 pct above what they were in June. Prices are poised to get out of hand and it will take some cool buying to hold them in line. This is precisely what big mill buyers feared when the market collapsed early this year—that prices would go too low and that the possibility of real buying would disorganize the market and skyrocket prices.

Steel Union Getting Tougher

There was no Labor Day picnic for steel this Monday. Anyone who gave the matter much thought could only come up with acute indigestion. Steel labor has been throwing its weight around, pulling an unusual number of wildcat strikes and stepping up the number of grievances in the mills. Just because the honeymoon is over does not mean a trip to Reno but there may be more harsh words before the two really get together again.

On top of this is the fact that coal is heading slowly but definitely toward a crisis. The steel industry is neither willing nor able to operate indefinitely at anything close to current levels on a 3-day coal mine work week with an extra day off for holidays. Its coal stocks are better than the national average at a number of big plants.

With consumption running ahead of production, national coal stocks will be at the critical reserve level within a few weeks, Steel will not be far behind. The difference is the cushion built up at many steel plants to counter Lewis' first strike threat. That cushion is going fast now. It looked a lot bigger 2 months ago when the steelmaking rate was in the mid 70's. But higher operating rates since then have made the stockpiles smaller in terms of number of day's reserve.

Plate Fabricators Order As Needed

Marketwise, the only thing that has staved off return of a wide scale quota system on flat-rolled steel is the seasonal decline in tinplate sales and the way carbon steel plate users are ordering close to the vest. Due to the pressure for plate by fabricators of oil and gas linepipe the inventory-cutting problem in this item was not as acute as it was in most other products.

However, because of a moderate upturn in plate some pipe fabricators who took orders 60 days ago promising quick delivery are going to miss some shipping dates; they didn't expect deliveries to be as extended as they are now. Any further sharp upturn in plate or a sudden revival in tinplate would bring the mill quota system back into sharp focus. The slabbing mills that feed the cold-rolled sheet mills also supply the semifinished product for plate and tinplate lines. No matter how you slice it there are only 16 oz of bologna in a 1-lb piece.

Pre-Strike July Was Buying Low Point

A check of August steel orders against the July pattern reveals that the first 2 weeks of July were the low point for the year, just as they were in the production end. When the steel strike was postponed in mid-July the order volume shot up. It would not surprise the industry to see the same pattern repeated this month until the strike question is settled.

Some steel melting operations will be halted on Labor Day. Unlike July Fourth, when mass shutdowns were the rule, a number of shops plan to work on the holiday, paying overtime. The holiday has therefore sent the steel ingot operating rate for this week off by one and one-half points to 85 pct of rated capacity. The drop from the last week in June to the week of July Fourth was 18 points, partly due to the holiday, partly due to falling business.

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Wherever autumn highways take you, you'll see sun bouncing off a better kind of farm roof. It's Alcoa Roofing Sheet. It's light, easy to put on. Keeps buildings cooler inside. Best of all, it lasts.

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That kind of work enables us to say "Alcoa Aluminum lasts!" . . . and back it up. It makes things of Alcoa Aluminum worth buying.

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THE METAL THAT LASTS

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Write for this helpful booklet filled with practical cost-saving ideas. Ask for Bulletin H20-4!

Handle it "thru-the-air" at lower cost

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LIFETIME CONSTRUCTION — Precision built — shaved gears running in oil — grease-sealed antifriction bearings — fully enclosed, moisture-proof, dust-proof, acid-proof.

SMOOTHER OPERATION—Motor specifically built for hoist service to withstand frequent reversal. Loads controlled within a fraction of an inch.

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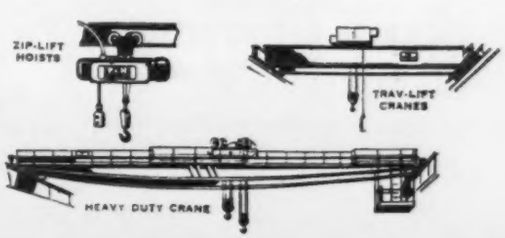

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Fatigue Cracks

By Charles T. Post

BLANK

Editor Tom Campbell was bursting his buttons last week showing off your f.f.j.'s new editorial format before a luncheon meeting. He waxed more and more eloquent as he passed from the page 2 editorial index, through the editorial, Newsfront and Summary. His audience was entranced.

With a flourish, he turned to the New Production Ideas insert with its business reply card making it easy for the reader to get additional information. He held it high over his head for all to see.

The audience tittered. Tom looked up at the issue he held in his hand. Of all the 24,950 copies published that week, the printer had chosen that particular magazine to slip in a blank page.

For once, an editor was at a loss for words.

HEX MAN

Your favorite family journal, accustomed to editing in an atmosphere of sweetness and light, welcomed John Bernard Delaney to its Pittsburgh perch with considerable trepidation.

On the face of it, Delaney's record was good. A veteran of 15 years with United Press in the Steel City, part of it as Bureau manager, he clearly could trace every vein and artery of the industry.

It was only when our private F.B.I. began checking up that Delaney's record as a hex showed up. Back in 1936, John won his first big promotion with U.P. Scarcely was he dry behind the ears when he got his feet wet. That was the year when the Pittsburgh flood inundated the metropolitan area, cutting off teletype communication. Newsmen climbed out of the U.P. office window. They trudged for blocks on a rickety railroad trestle, typewriters in hand, to establish a new beachhead in a Bell Telephone office. News went out for several days by Morse code.

Then, in 1945, John became U.P. bureau manager. That was the day when the elements cracked loose with the only full-fledged hurricane in Pittsburgh history, blowing our hero into his new responsibility in style.

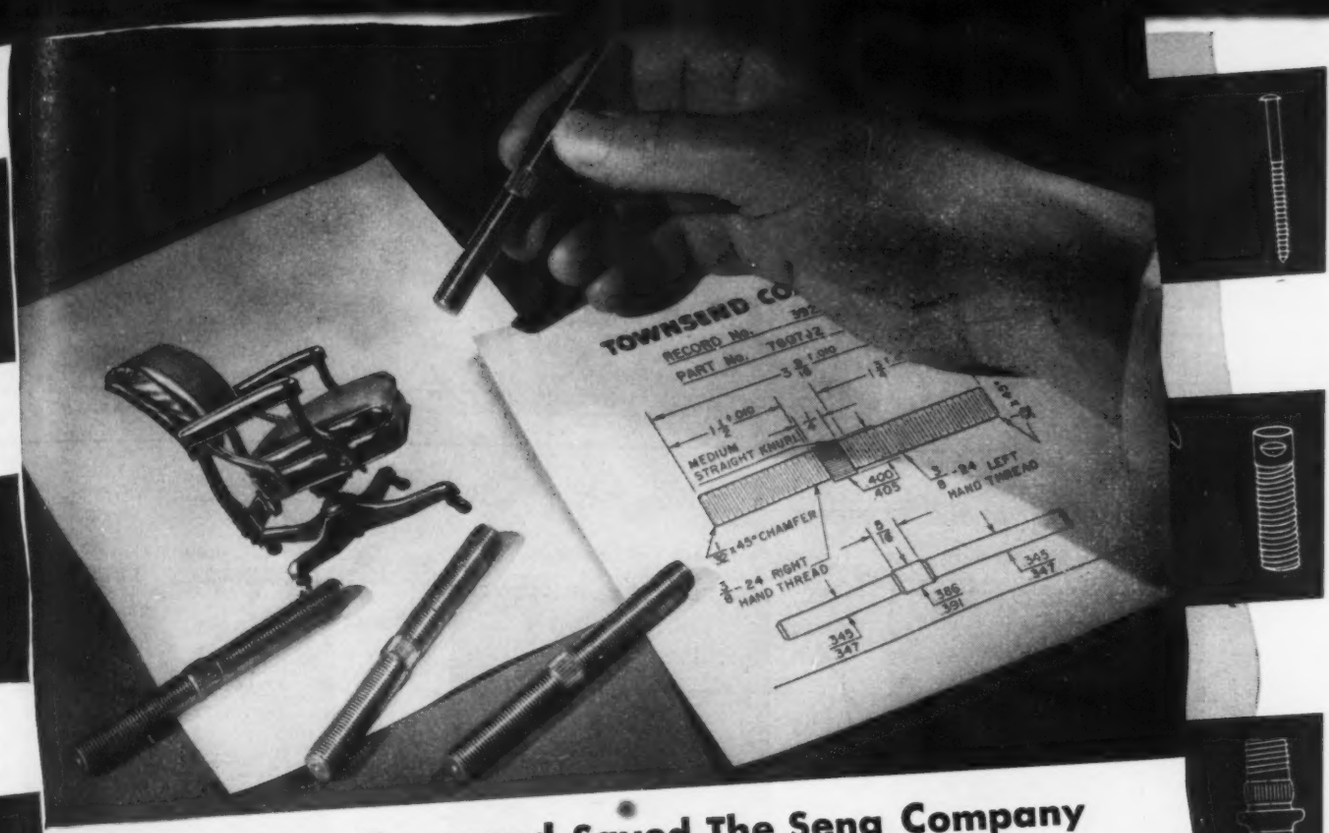
Your f.f.j. was prepared for the worst when it put the Delaney name on the masthead. Sure enough, the same week the steel industry developed a labor crisis, prepared to go down on strike. It took the White House to prevent the strike threat from materializing.

The atmosphere around the newsroom still is tense. The brains department doesn't know what to expect next, but it's a safe bet it won't be good news.

ANAPTRONYM

An anaptronym, as we see it, is the antonym of aptronym. Follow? An aptronym is when the name fits the job, like our friend

Turn to Page 158



Here's How Townsend Saved The Seng Company $27.63 Per Thousand On One Cold Headed Part

This is an example of how a Chicago manufacturer, *who might have been you*, saved a large amount of money through the use of a Townsend cold headed part and thereby produced a better product for less money. The threaded adjusting screw (illustrated above) for the tilt back of the Seng action control for executive chairs is now being produced at Townsend by cold heading, knurling and roll threading for only $16.87 per thousand. The lowest price quoted for screw machine production was $44.50. This clear saving of $27.63 per thousand is important because Seng chair action control production is extremely high. Not only that, the Townsend part, being cold formed, is stronger than a part machined from bar stock and the roll threads are tougher and more uniform than machined threads. This gives The Seng Company an adjustment screw that works easily and helps produce a better chair at less cost.

This is not an isolated case with Townsend engineered parts and fasteners. It is typical of how Townsend helps save money and time by working closely with manufacturers in designing parts for many applications. Townsend parts and fasteners are cold headed, pointed, machined, drilled, slotted, trimmed, roll threaded, extruded, pierced, knurled, bent or flattened. They are produced in carbon, alloy and stainless steels—in brass, bronze, copper, aluminum—in a variety of platings and finishes.

To find out how to reduce costs and improve your products with Townsend cold headed parts send us a sample or sketch of the parts you need. Our engineers will gladly give you an estimate without obligation.

Call or write today to:

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New Brighton, Pa.

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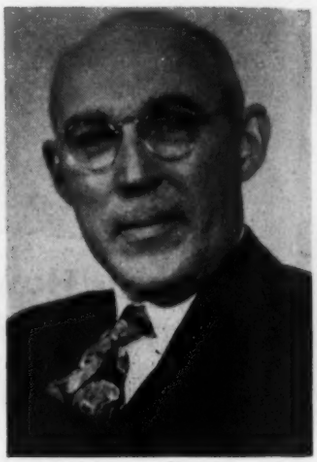
THOMAS E. NOLAN, vice-president in charge of production, Blair Strip Steel Co.

FRANCIS S. SOWERSBY, treasurer, Blair Strip Steel Co.



JAMES L. BYROM, vice-president, Niles-Bement-Pond Co.

Thomas E. Nolan has been elected vice-president in charge of production, BLAIR STRIP STEEL CO., New Castle, Pa. **Francis S. Sowersby** has been elected treasurer of the company.

Murray Owen has joined WESTERN INSULATED WIRE CO., Los Angeles, as general sales manager. Mr. Owen comes to Western after 28 years with the General Electric Co. and a background in the electrical industry dating back to the time asbestos wire was first introduced.

Earl R. Herb has been named district sales manager for THE OSGOOD CO. and THE GENERAL EXCAVATOR CO., Marion, Ohio. Mr. Herb will make his headquarters at Milwaukee and will work with Osgood-General distributors for North and South Dakota, Minnesota, Wisconsin, Michigan, and northern Indiana and Illinois.

George A. Sederberg has been promoted to superintendent of the Gary plant of the Union Drawn Steel Div., REPUBLIC STEEL CORP., Cleveland. Mr. Sederberg came to the division in 1922 and worked his way up to assistant superintendent of the Gary plant in 1946.

Richard A. Blywise has been appointed executive vice-president of THE GRABLER MANUFACTURING CO., Cleveland.

Walter M. Reynolds of Dearborn, Mich., has been elected secretary of Morse Chain Co., a division of BORG-WARNER CORP., Chicago. Reynolds retains his post as controller of the division.

Thomas D. Fuller, formerly industrial engineer, has been transferred to the sales merchandising department, Radio Div., of SYLVANIA PRODUCTS INC., New York.

James L. Byrom, manager of the Chandler-Evans Division of NILES-BEMENT-POND CO., West Hartford, Conn., has been elected a vice-president of the company.

Isaac M. Chambers, assistant general superintendent, Spring Works, CRUCIBLE STEEL CO. OF AMERICA, Pittsburgh, has succeeded **M. V. O'Donnell** as general superintendent. **Howard Patterson has** been appointed superintendent of the agricultural departments at the Midland, Pa., Works of Crucible.

William S. Troy has been appointed purchasing agent of MICHIGAN SEAMLESS TUBE CO., South Lyon, Mich.

J. R. Williams is the new Chicago district manager for THE ELECTRIC PRODUCTS CO., Cleveland. Mr. Williams was formerly associated with General Electric Co. in Philadelphia.

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R. J. WEBBER, assistant director of purchases, Great Lakes Steel Corp.

E. J. DUFFY, assistant general superintendent, Kaiser Steel Corp. plant at Fontana, Calif.

H. E. CHILCOAT, manager railroad sales department, Townsend Co.

H. E. Chilcoat has been appointed manager of the newly created railroad sales department for TOWNSEND CO., New Brighton, Pa. Mr. Chilcoat was formerly vice-president in charge of sales for Pressed Steel Car Co., Pittsburgh.

George Dixon has been made assistant parts and accessories manager for the Lincoln-Mercury Div., FORD MOTOR CO., Detroit. Mr. Dixon has been in the automobile business since 1928 when he joined Cadillac Motor Car Co.

Carl D. Smith, who has been with Firestone Tire & Rubber Co., Akron, Ohio for 26 years, has joined the LeTOURNEAU CO., Peoria, Ill., as special representative of the sales division. He has long been associated with the heavy machinery industry in the development and use of large rubber tires.

E. R. Schneider has been named director of purchases for GREAT LAKES STEEL CORP., Ecorse, Mich. **R. J. Webber** has been promoted to assistant director of purchases of the corporation. **F. E. Caskey** has been made purchasing agent.

Wilfred D. MacDonnell has been appointed assistant general manager of the Johnstown, Pa., plant of BETHLEHEM STEEL CO. **James A. Creighton,** superintendent of the company's No. 1 openhearth department at Lackawanna, succeeds Mr. MacDonnell as superintendent of openhearths at Lackawanna, and **Joseph L. Walton,** assistant superintendent of the No. 1 openhearth, becomes superintendent.

Dr. Martin H. Heerin, for many years director of research for the Armour Research Foundation of Illinois Institute of Technology, has been named director of applied research for the industrial products division of ELGIN NATIONAL WATCH CO., Aurora, Ill.

John A. Robinson has been made regional sales manager for the Midwest, Northwest, Rocky Mountain and Pacific Coast areas for Brown Instruments Div., MINNEAPOLIS-HONEYWELL REGULATOR CO. **Charles E. Sharp** has succeeded Mr. Robinson as Chicago branch industrial manager for the division.

Joseph G. Wortley and **Edwin M. Shaw** have been added to the New York district sales office of COLD METAL PRODUCTS CO., Youngstown, Ohio.

E. J. Duffy has been named assistant general superintendent of KAISER STEEL CORP. plant at Fontana, Calif. He returns to Fontana after serving as manager of the Kaiser-Frazer Parts Corp. blast furnace at Provo, Utah.

Clarence H. Le Vee has been appointed eastern sales manager of the electrical wire and cable department, U. S. RUBBER CO., New York. **J. A. Leuver** is western division sales manager with headquarters in Chicago. **Don B. Karlskind** has become southwestern division sales manager with headquarters in Dallas, and **L. M. Guibara** is Pacific coast division sales manager with headquarters in Los Angeles.

George M. Lange has been named regional sales manager for the midwest area by TYSON BEARING CORP., Massillon, Ohio. Immediately prior to his new appointment, Mr. Lange was a project engineer for the Excello Corp. of Detroit.

A. C. Runette assumes new duties as manager of sand and permanent-mold casting product sales for ALUMINUM CO. OF AMERICA, Pittsburgh. He has been a member of ALCOA's sales organization since 1927.

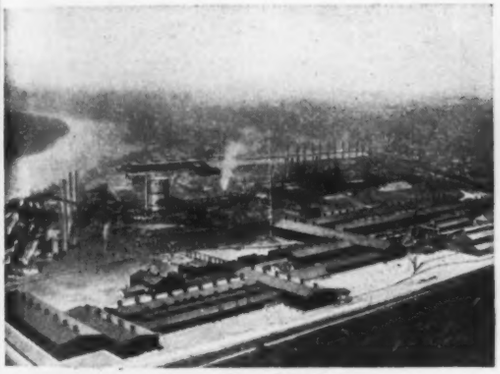
J. K. Hamilton has become manager with **H. O. Klinke** as assistant manager, of the apparatus research division of AIR REDUCTION SALES CO., New York. **J. T. McKnight** is appointed superintendent of the production and services section, and **T. J. Cholis** becomes supervisor of the

the adolescent stage has passed

UNIVERSITY OF MICHIGAN LIBRARIES

for stainless sheet and strip

Stainless steel production methods have grown up, thanks to modern advances in strip mill practice. CRUCIBLE, for generations the name in specialty steels, has taken all prior development of stainless steel an $18,000,000 step ahead. At the Midland Works, stainless for the *first time* is made a *specialty product* in an all-new mill built *specifically* for stainless production. In this modern project, every building, every piece of equipment has been designed to make use of the best industry-tested techniques plus exclusive features designed by Crucible's steel specialists.



new tools for a **MASTER** mechanic

Here at this new mill stainless sheet and strip will be rolled in widths of ½" to 50" inclusive, in all gauges, grades and finishes. Crucible's latest contribution rounds out an integrated program in stainless. Now every form is available from Crucible: sheets, strip, plates, bars, wire, forgings, castings and tubing (manufactured by the new subsidiary, Trent Tube Company). When you ask for Crucible Stainless, you're assured of the finest that modern tools and a half century of specialty steel experience can offer. Data sheets on request. Your inquiries will receive prompt attention.

CRUCIBLE STEEL COMPANY OF AMERICA
405 Lexington Ave., New York 17, N.Y.
Branches, Warehouses and Distributors in Principal Cities

CRUCIBLE first name in special purpose steels

hot and cold rolled **STAINLESS SHEET AND STRIP**

STAINLESS • HIGH SPEED • TOOL • ALLOY • MACHINERY • SPECIAL PURPOSE • STEELS

Iron Age Introduces

Continued from Page 25

patent section. All four men are on the staff of the Air Reduction research laboratory at Murray Hill, N. J.

Dr. N. W. Snyder, assistant professor of mechanical engineering at the University of California, has joined the staff of SANTA FE TANK & TOWER CO., Los Angeles, as chief technical consultant.

Howard P. Gerlach has been appointed vice-president of JOHN W. HARRIS ASSOCIATES, INC., New York. He will be in charge of the firm's Chicago office.

John C. Toomey has become a district sales engineer in the Detroit district office of CHAIN BELT CO., Milwaukee.

Eric G. Peterson has become general manager of PEABODY ENGINEERING CORP., New York. He

ERIC G. PETERSON, general manager, Peabody Engineering Corp.

will continue as general salesmanager of all products in all divisions.

W. J. O'Connell is the new district sales manager for STAR TUBULAR PRODUCTS CO., Chicago. His headquarters will be at Louisville.

Clifton W. Woltz, COOPER-BESSEMER CORP. sales engineer, has been transferred from the corporation's headquarters at Mt. Vernon, Ohio, to the Dallas branch office.

Elwell Jones has been named division sales manager of the DELAWARE, LACKAWANNA & WESTERN COAL CO., with headquarters at Buffalo. He succeeds **Harold F. Vermilya,** who was appointed sales manager in New York.

R. Russell Fayles, who came to LUKENS STEEL CO., Coatesville, Pa., in 1941 as openhearth fuel engi-

R. RUSSELL FAYLES, fuel engineer, Lukens Steel Co.

neer and who subsequently became assistant to the openhearth superintendent, has been made fuel engineer of the company. Prior to his association with Lukens, Mr. Fayles was for four years assistant fuel and power engineer at the Vandegrift Works of Carnegie-Illinois Steel Corp.

Edward C. Loppnow, formerly Kansas City zone manager, will assume new duties in BUICK MOTOR DIV. as Minneapolis zone manager, replacing **Eugene J. Sullivan** who has accepted a Buick dealership. **R. P. Sullivan,** previously zone manager at St. Louis, succeeds Mr. Loppnow at Kansas City. **Robert J. Waller** rises from assistant zone manager at St. Louis to zone manager there.

Dr. Eugen Sovegjarto, welding alloys research expert formerly employed by leading metallurgical concerns in Germany, has been added to the research staff of EUTECTIC WELDING ALLOYS CORP., New York.

C. C. BRAY, regional supervisor, midwestern district office, De Laval Steam Turbine Co.

C. C. Bray has been appointed regional supervisor of the new midwestern district office of the Imo-De Laval Products Div. of DE LAVAL STEAM TURBINE CO., Trenton, N. J. **F. H. Bagley** has been transferred from the Chicago district office to the new midwestern office.

Wilbur D. Prescott has been elected assistant treasurer of CLEVELAND GRAPHITE BRONZE CO. **Charles A. Dilley** has been elected assistant secretary. Both men have served in various departments of the company.

Thomas R. Chadwick was recently appointed central division sales manager of THOR CORP., Chicago. He was associated previously with Cory Corp., Chicago.

Philip Heiberger has joined ATLAS POWDER CO., Wilmington Del., as senior lacquer chemist of the Stamford, Conn., branch.

Hayden Jones, Jr., Norman Phillips and **Earle Young, Jr.,** have recently been added to the chemical laboratory staff of the research & development department of THE BABCOCK & WILCOX CO., Alliance, Ohio.

Will L. Corbett, veteran steel executive, has been appointed to a newly created post of assistant to the district manager of American Steel & Wire Co., Pittsburgh, a subsidiary of U. S. STEEL CORP. Mr. Corbett

Turn to Page 112

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These exclusive features point the way to better sales and lower production costs
TRUE STAINLESS—the chrome-nickel series—maximum corrosion resistance; greatest sales appeal.
LUSTROUS MIRROR-BRIGHT FINISH — even in dead soft temper — eliminates or substantially reduces costly polishing and finishing operations.
EXTREMELY CLOSE GAUGE TOLERANCES—more parts per pound; more parts per die grind.
EXTRA LONG COILS — fewer machine shutdowns for coil replacement. Fractional-inch widths oscillated-wound to give several times the footage practical with ordinary ribbon-wound coils.
BRIGHT ANNEALED 18-8 STAINLESS
THINSTEEL
If you are looking for ways to strengthen your sales picture and cut costs, a CMP representative will be glad to call and show you how 18-8 Bright Annealed THINSTEEL can help.
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GLOBAL LETTER

REVIEW OF WORLD MARKETS

Agitation over German dismantling called "smokescreen" . . . Steel output levels off . . . French mines need mechanization . . . Financial arrangements are not yet completed.

London—The agitation over the dismantling of German steel plants is a smoke screen, declares the British Iron & Steel Federation.

A serious long-term program for modernizing and reequipping the German steel industry would undoubtedly pull out a great deal more plant than is being removed for reparations under the present plan. And a good deal of the plant now being dismantled would be included.

The justification for its removal now is a security one. Equally important on those grounds are the projected controls over new equipment.

Agreement Needed

The important issue for the next months isn't the size of the German steel industry—or its exact shape. A bigger issue is who is to be left in control. Will those left in control honestly join with other European steel industries in accordance with government policies in organizing their affairs for the common good?

The Federation calls for an early agreement between the British and American governments on the future organization of the steel industry in Germany.

The rigid maintenance of the views held at present by both governments may force a new grouping of steel interests in Europe—with the United Kingdom on the outside. It may also prevent the growth of cooperation so necessary to the balanced development of the European steel industry.

Crude steel production in the Bizone has leveled off at a rate of about 9 million tons per year. For several reasons it is hard to predict its trend in the near future.

After the first few months, in which works were being gradually restarted, the postwar production story was dominated by shortages of materials, power, gas and labor. Until the currency reform and the blockade of Berlin (which had the effect of releasing more fuel to the Ruhr) the rise in steel output was slow.

Following these events there was an upsurge in industrial production, especially in steel.

Output Levelling Off

The fact that production is levelling off doesn't prove that the figure of 11 million metric tons for German requirements laid down in the 1947 level-of-industry plan is excessive. It is primarily due to a falling order book caused by a shortage of finance on the part of consumers. It is also affected by other maladjustments in the economy generally, and by lack of balance in the various rates of industrial expansion.

The entire price structure was disturbed by the currency reform after a period in which the normal price mechanism had ceased to work. Basic materials and wages have been controlled. Except for a few upward revisions they have remained fairly steady. But other prices have been free and they have fluctuated widely. They are now high for pockets.

Evasive Action

The idea that the German steel industry should remain uncompetitive is a position the Germans don't accept. There are indications of efforts in several directions to change this. They include steps to halt dismantling, the raising of finance in Germany, the use of ECA counterpart funds, the return of foreign investment and even the device of partial foreign ownership.

French Mining Industry Must Resort to Mechanization

Paris — The French Iron Ore Mines Federation reports that recent studies show that iron ore production can't be increased by merely adding more manpower. The aim must be toward an increasing use of mechanization. Various types of machines of French and American design have already been tried.

The Federation believes that

Turn to page 170

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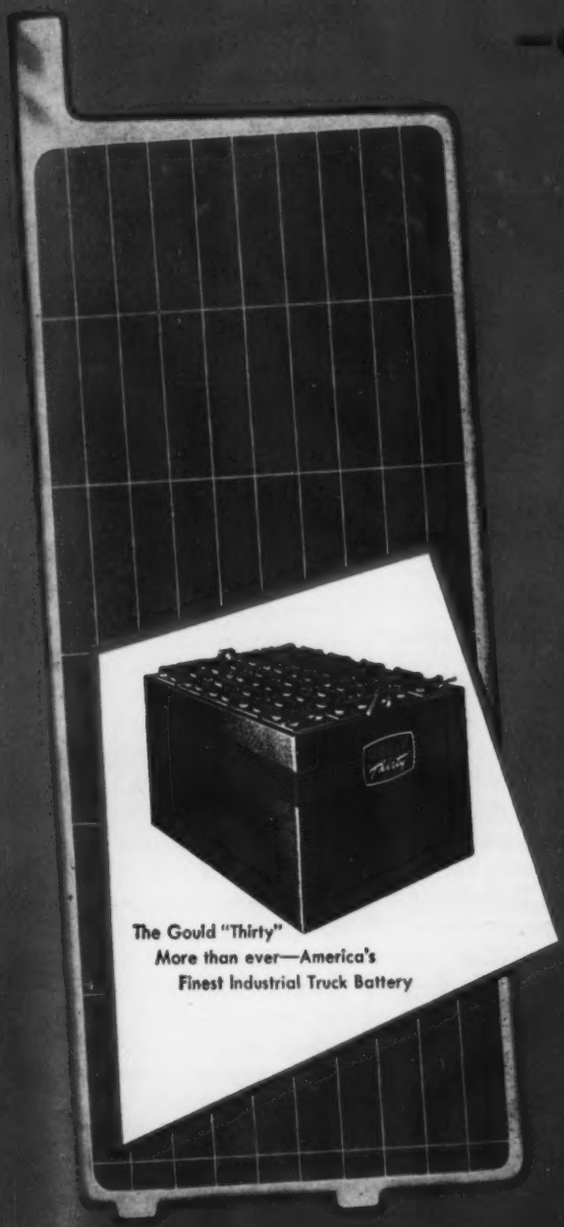
GOULD "Z" PLATE—

66% More Resistant To Peroxidation!

—ONLY GOULD HAS IT!



The Gould "Thirty"
More than ever—America's
Finest Industrial Truck Battery

Tests prove that the new progressive solidification and casting techniques employed in the "Z" Plate make the grid 66% more resistant to peroxidation! And why not? Here is the only positive grid in existence that is non-porous and completely solid all the way through—that produces full power throughout long battery life.

This is only one of the reasons why Gould "Z" Plate Batteries stay new longer . . . operate at full capacity more months! Another is a remarkable regenerative active material that renews its energy every day the battery is in use!

This revolutionary "Z" Plate didn't just happen. Its perfection required years of research in Gould's modern laboratories and almost endless testing in Gould's own pilot plant.

Gould "Z" Plate Batteries are so superior to anything heretofore available, you can't afford anything else. Decide NOW on Gould "Z" Plate Batteries. Write us outlining your requirements and we will be glad to submit a proposal by return mail.

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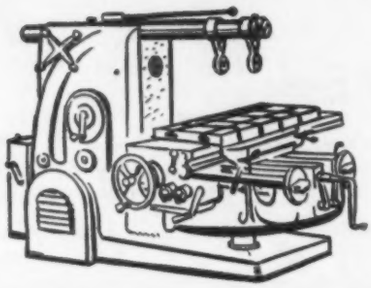
Always Use Gould Automobile and Truck Batteries



MACHINE TOOL High Spots

SALES, INQUIRIES AND PRODUCTION

by William A. Lloyd

Industry awaiting rising sales trend this month . . . Dodge orders reported.

Cleveland—Beginning of a rising sales trend before the end of September and continuing well into the fourth quarter was awaited this week by major segments of the machine tool industry.

Volume of inquiries and quotations continues to be the basis for much optimism and also the fact that while July was the lowest postwar month for the industry, some companies did well.

In Detroit, machine tool activity is growing to a point where most sources now anticipate a much better final quarter than had been looked for a few months ago. In addition to a sizable volume of orders coming in at the present time, the prospects for future business are undoubtedly as good as or better than they have been at any time this year.

Dodge Orders Reported

Specifically, while the new Dodge engine program appears to have been shelved for the moment, a sizable amount of new Dodge ordering for product improvement has been reported. Additional Borg-Warner orders for a new automatic transmission are reported, although the outlook here is that a large part of the program will be supplied by other than new equipment. New tooling for Ford's Rouge tool room has been placed, in addition to placements for the Ford press plant at Buffalo and the Ford diecasting program.

While much speculation has been heard about new light cars, particularly by Nash and Hudson, there is no indication at the moment that any substantial amount of new tooling is involved at present even if a definite program has been set up. Most sourses are inclined to agree that a stripped down model already in production is at least as good a bet for the future as the much talked about light cars that have a prominent place in many conversations here.

Fourth Quarter Looks Better

In Cleveland, fourth quarter sales prospects for the machine tool industry look better, according to L. D. McDonald, president, National Machine Tool Builders Assn., and a vice-president of Warner & Swasey Co.

"We've been pretty low this summer," Mr. McDonald pointed out, "and the sales situation is still pretty spotty, but there is definitely more optimism for the fourth quarter."

He added, however, that it is problematical how far the business in sight will carry the industry.

Naming uncertainty regarding a forth round wage increase and taxes as major factors in discouraging investment in capital equipment, Mr. McDonald said the machine tool industry needs a restoration of confidence on the part of its customers.

"Manufacturers are beginning to rebuild inventories, which means increased production, and business in general seems pretty well resigned to no tax reduction," he added.

ECA Has Helped

According to Mr. McDonald, government programs, rearmament, foreign aid, etc., outside of ECA have been pretty barren in producing machine tool orders. ECA however has been a big help in keeping the industry going, with some companies getting 50 pct of their orders from this source.

While he expects the dollar value of 1949 machine tool shipments to be slightly under 1948's $28,400,000, Mr. McDonald said a slow increase will gather momentum in the spring, a good deal sooner than we expected, barring strikes and a fourth round.

In the East, despite the shock of the liquidation of a government owned machine tool surplus and the recession's chilling effect on domestic buying, there have been no machine tool failures in New England. Dividends to stockholders in most cases continue to be paid and lathes are still turning in makers' plants.

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COLD SHOULDER!

Specifications for aircraft hydraulic control valves had this designer roped and tied. Make it small! . . . Make it light! . . . Make it strong! . . . Make it cheap! He knew magnesium filled the bill for lightness and strength . . . but gave it the cold shoulder. He took his problems to Aluminum Company of America, light metal headquarters, and learned surprising things. Simple shop practices make handling magnesium no problem.* He discovered, too, that every month fellow manufacturers are using over a million pounds of magnesium. He found that immediately-available magnesium forgings were plenty strong, light and small enough to beat the specifications. Cheap to finish, too, for magnesium machines best of all commercial metals. He got books on designing and fabricating magnesium, plus all the technical aid he needed. He says his M. E. Degree stands for Magnesium Enthusiast, too.

*No change in insurance rates.

These two, free books on magnesium and our broad technical experience can help your products, too. Write Aluminum Company of America, sales agent for American Magnesium Products, 1701-J Gulf Building, Pittsburgh 19, Pennsylvania.

MAGNESIUM MAZLO PRODUCTS

AMERICAN MAGNESIUM CORPORATION

FREE PUBLICATIONS

USE THIS POST CARD

New publications that describe money saving equipment and services are available free and without obligation. Copies can be obtained by filling in the attached card and mailing it.

Foundry Flasks

Combination catalog and price list, describes foundry flask equipment, and explains how to estimate cost and order such equipment. *Black, Sivalls & Bryson, Inc. For more information, check No. 1 on the postcard.*

Brass and Copper

Buying guide lists 2000 brass and copper items, size ranges, tempers, hardness, tensile strengths, machinability and ASTM specifications. *Central Steel & Wire Co. For more information, check No. 2 on the postcard.*

Tools and Fixtures

Tools and special machinery such as collet fixtures, collets and pads, multiple spindle drilling and tapping heads and broaching machinery are listed and described in engineering manual, catalog No. 10. *Zagar Tool, Inc. For more information, check No. 3 on the postcard.*

Conveyer Belts

Belts, idlers, rollers, trippers, brushes, scrapers, brakes, take-ups, pillow blocks, pulleys and feeders are described in engineering data book No. ID-481; also contains conveyer diagrams and engineering data. *Industrial Div., Continental Gin Co. For more information, check No. 4 on the postcard.*

Planers

Open side planers of various types are the subject of 8-p. bulletin. Described are features of machines and a list of users. *Cleveland Planer. For more information, check No. 5 on the postcard.*

Vacuum Pumps

Catalog No. 700 describes high vacuum pumps and gives specifications and applications in research and industry. Included are engineering data and solutions of high vacuum problems. *F. J. Stokes Machine Co. For more information, check No. 6 on the postcard.*

Electric Ovens

Electric ovens for curing coatings on plating racks are described in bulletin No. 1061. Ovens have automatic temperature control and operate in 300° to 400°F range. *Belke Mfg. Co. For more information, check No. 7 on the postcard.*

Diamond Compound

Pure, virgin diamond compound, universally soluble in all commercial solvents and water is described in bulletin. Compound is available in several grades for which prices are listed. *Industrial Products Div., Elgin National Watch Co. For more information, check No. 8 on the postcard.*

Metal Partitions

Catalog No. 49-C describes movable metal partitions, doors and hardware for various industrial applications. Included are examples, specifications and instructions for installation. *Mills Co. For more information, check No. 9 on the postcard.*

Surface Plates

Surface plates, lapping plates, parallels, straight edges, universal boring mill angles, inspectors indicator bases and V-blocks are listed in bulletin No. 56. *Tatra Tool Co. For more information, check No. 10 on the postcard.*

Die Sets

Catalog lists sizes and specifications of die sets, bolster plates, guide posts, punch shanks, bushings, springs and other die acces-

Turn to page 117

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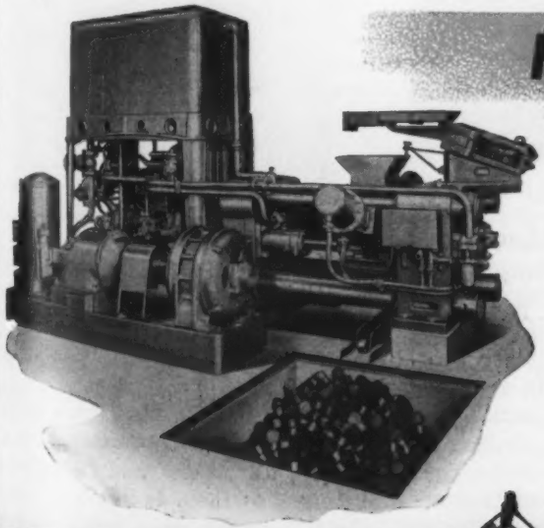
CASH IN YOUR Chips!

Comparison of borings and turnings, before crushing, after briquetting.

Why Hang on to Bulky Scrap When You Can Turn It into CASH — Quickly and Easily!

Yes sir! It's like trading white chips for blue ones. With a Milwaukee Briquetting Press, you can easily convert your bulky borings and turnings into more profitable, compact briquettes. You not only conserve valuable floor space, but the briquettes give you a clean, machineable metal, made of your own scrap, and of known analysis. Briquetting means EXTRA PROFITS . . . the result of more efficient scrap handling.

Investigate the value of your chips! A Milwaukee Foundry Equipment Engineer will gladly help you. Write — today.



Milwaukee Hydraulic BRIQUETTING PRESS

Model No. 350, shown here, compresses bulky scrap into compact briquettes (from 4¼" to 5" in diameter) at the rate of 720 briquettes per hour. Steel, cast iron or nonferrous metal. Briquettes are uniform in size and density. Press is fully automatic. The entire briquetting plant, including, hoppers, conveyors, elevators, crushers, etc., can be completely amortized in 7 months to 18 months, depending on type and volume of borings or turnings used.

● **Look to MILWAUKEE when in need of Molding Machines, Core Blowers, Core Grinders or Briquetting Presses. Write for descriptive literature.**

MILWAUKEE Foundry Equipment Co.

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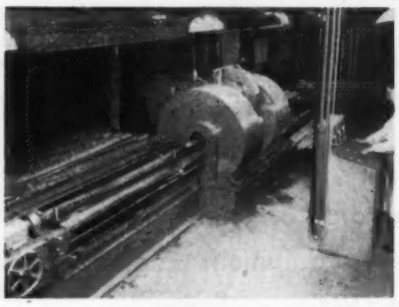
NEW PRODUCTION IDEAS

Continued

plication is for handling sulfuric acid. It withstands the corrosives normally handled in fume ducts. There is no coating or lining to become loose, chip, crack, spall or absorb corrosives. It is easy to fabricate and is lighter and stronger than other materials used for corrosive fume service. Production is chiefly 24 to 11 gage and the smaller thicknesses of plate. *Duriron Co., Inc. For more information, check No.* 30 *on the postcard on p.* 37.

Bar Grinder

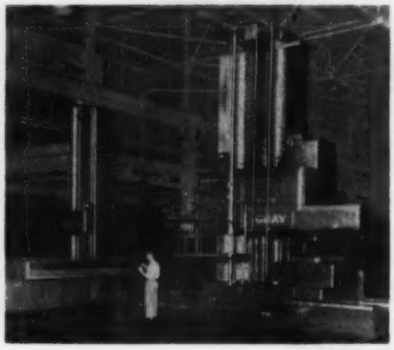
An automatic machine for rough surface grinding of alloy steel bars removes a uniform amount of stock from all sides of the bar and ex-



poses the entire surface for inspection. Two planetary units turn the bar and at the same time advance it under a high speed grinding wheel, that is kept in constant contact with the bar. The pressure is varied during the operation to prevent excess wear at the corners and can be adjusted to provide a deep or light cut. *Wilbur B. Driver Co. For more information, check No.* 31 *on the postcard on p.* 37.

Boring Machine

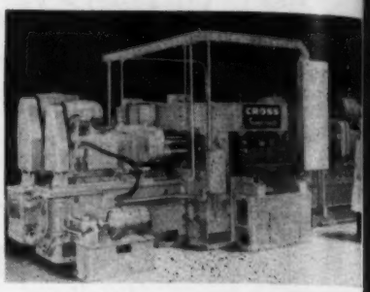
A new planer-type boring, drilling and milling machine has an 8-in. diam nitralloy bar that has a 7-ft continuous feed and is driven by a 75 hp ac motor. Twenty-four bar speeds are selectively controlled by three levers, two of which are range selectors and the third, the speed selector that may be operated without stopping the bar or the motor. Four speed ranges have six speeds in each range. Controls for the head, column, bar, and table are centralized on the pendant switch. Two variable voltage feed motors are used, one for feeding and tra-



versing the table and the other for the column base, head and bar. Synchronized movement of the head and end support provides 12-ft vertical travel above the 9-ft wide table. The table has 20 ft longitudinal movement on the bed and the main column has 10 ft feed or rapid traverse movement on the runway. A power driven 7x8-ft rotary indexing table supports castings weighing 85 tons. A right angle milling head with a 48-in. extension and a 60-in. diam continuous feed facing and boring head are used with the machine. *G. A. Gray Co. For more information, check No.* 32 *on the postcard on p.* 37.

Special Purpose Machine

Forty-five individual finishing operations on cylinder blocks are performed on a special machine tool, with only one unskilled operator. Seven crankshaft and four camshaft bearings are rough bored, the oil gallery hole is drilled, 21 holes in the front face of the block and 10 holes in the rear face are drilled and two locating holes in the rear face are reamed. The machine was designed to produce 35 cylinder blocks per hr at 100 pct efficiency. The transfer mechanism carries parts from station to station where they are positioned by power elevators and automatically secured by individual clamps. Seven



stations are provided: A loading station, five working stations and an intermediate inspection station. Other features include hydraulic feeds, hardened and ground steel ways and automatic push-button control working cycle. *Cross Co. For more information, check No.* 33 *on the postcard on p.* 37.

Gear Shaving Machine

External transmission gears regardless of size and including cluster and stem, and timing gears can now be shaved automatically, on a gear shaving machine equipped with the automatic loader. The machine runs continuously as long as the

magazine is kept filled with work. The Model GCU diagonal gear shaving machine and automatic loader illustrated is shaving a 32-tooth constant mesh transmission gear at the end of a cluster. This is a helical gear having 3.765 pitch

Turn to Page 120

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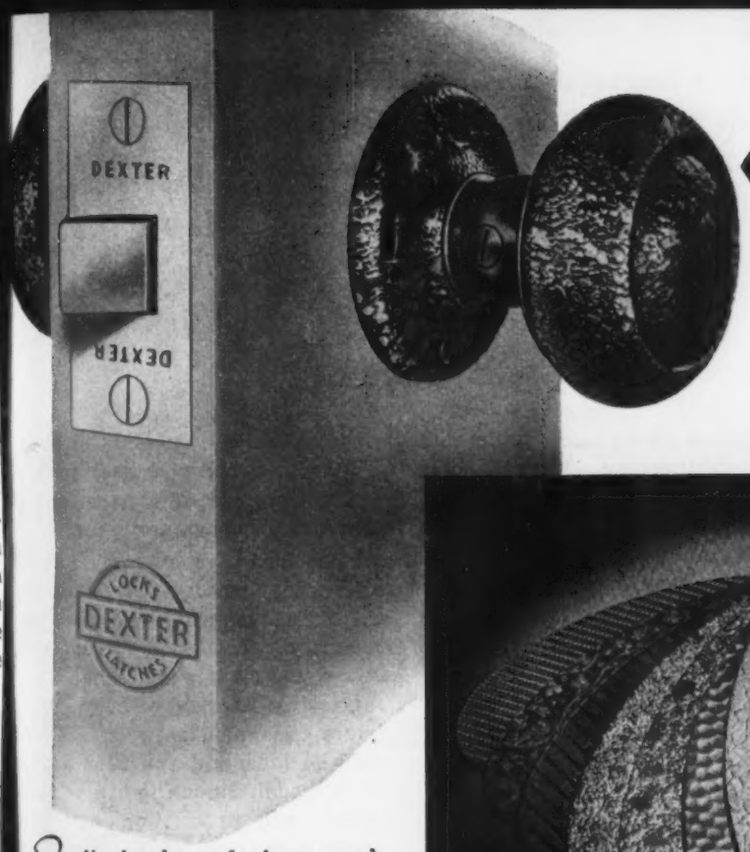
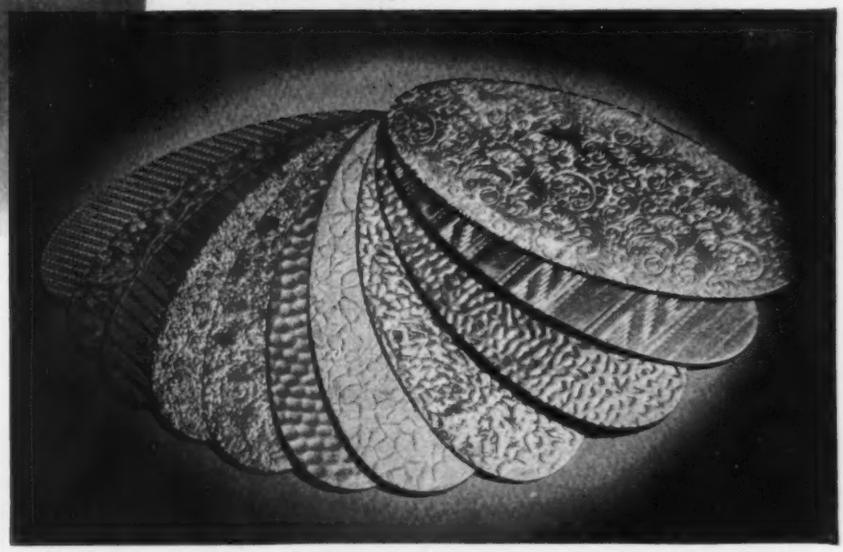
REVERE EMBOSSED METAL ADDS TO BEAUTY

of Solid Brass Hardware



A Dexter set made by National Brass Company, Grand Rapids, Michigan; in the lifetime beauty of solid brass. Knob is fabricated from a Revere Embossed Pattern.

Inset, some embossed patterns produced by Revere.



Quality hardware for homes and ommercial buildings always is solid ass or bronze. There are no substi- tes for these solid, ever-lasting metals at cannot rust, whose beauty is not in deep but goes all the way through. nus time and use improve the finish stead of spoiling it. That is why od buildings everywhere feature lid brass and bronze for such items locksets, door knobs, butts, latches, ngers, hooks, and similar parts that ould speak of quality as long as the ilding stands.

Take the National Brass Company. his well-known hardware manufac- rer features solid brass 100%, know- g that any architect, builder or home wner recognizes the worth of endur- g high quality. Their line is trade- arked "Dexter", and one of its feature ems is trim in etched finish. Actually ese items use solid Revere Embossed ass, which is furnished in a variety of andard and special patterns, ready for fabrication into articles of exceptional attractiveness, not only hardware, but also a wide range of products such as compacts, clock dials, cigarette cases, jewelry. National Brass states that Revere Embossed Brass not only produces a really handsome line, but one whose beauty increases with age, since use brightens the high-lighted raised surfaces, while the shadows in the depressions provide an effective contrast. Thus this fine Revere Metal assures lasting satisfaction to the home owner, and enhances the reputation of the architect, contractor, and builder. . . . For true quality, high sales appeal, and enduring service, wise manufacturers use solid durable metals such as copper, brass, bronze, nickel silver provided by Revere not only in Embossed Metal but in plain sheet and strip and in bar, rod, extruded shapes.

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On the ASSEMBLY LINE

AUTOMOTIVE NEWS AND OPINIONS

Simple change in K-F cars requires over 500 new part numbers . . . Auto labor crisis waits on the findings of steel board . . . Auto models are getting shorter.

by Walter G. Patton

Detroit—Easily overlooked are the "tremendous trifles" that must be considered in making a model change in a modern automobile and the unpredictable consequences of some of these changes.

One of the best examples, because at first glance the changes involved seem so inconsequential, is the Kaiser Traveler.

It will be recalled that the Traveler's rear seat folds out of the way to convert a standard sedan into the equivalent of a station wagon with 130 cu ft of cargo space. The floor area in the Traveler is 10 ft long. Aside from the change in the seating arrangement and use of two hinged panels at the rear of the car it would appear that few changes have been made in the present Kaiser sedan.

On the contrary, more than 500 new part numbers had to be created to bring the new model into production! More than 200 big and little engineering changes were involved. Here are some of them:

The tail gate is entirely new. A new license light had to be specified that would remain lighted with the tail gate in the down position. This called for a new wiring harness.

Body Had to be Reinforced

To provide adequate support for the new design, the body had to be reinforced at several locations. The floor and the floor hinge mountings were changed. The upper deck lid is new and new weather molding is specified. The upper panel hinges are also new. New skid strips were required for the floor and several chromium plated "dress up" strips have been added.

Hardware is new throughout. The rear opening has been framed with steel to provide additional support. Heavy duty rear springs are being used. The floor covering is new. It was also necessary to relocate the spare tire and to close up the left rear door which no longer opens.

Idea Conceived a Year Ago

The cargo opening required new panel dies. Other problems that had to be solved included designing the necessary structural reinforcements, special electrical equipment, the new rear window, a new license plate panel and an entirely new bumper assembly.

The idea of converting a standard sedan into a cargo-carrying utility model was first given serious consideration by K-F executives just a little more than a year ago. Nine extremely busy months were consumed between the birth of the idea and the first production model. Since the utility model went into production early this year, more than 15,000 units have gone into service. At present, the Traveler and the deluxe Vagabond account for 46 pct of K-F production.

According to latest reports the supply of Vagabond models in dealers' hands have been exhausted. Incidentally, total number of K-F cars in stock in the field is now less than 10,000.

Others Expected Soon

It is an open secret that other car producers are giving serious consideration to a design similar to the K-F utility model. It would indeed be a surprise if other auto makers fail to bring out new cargo models within the next 6 to 12 months.

The wood station wagon was on the way out in the opinion of most

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New Bulletin just off the press. You'll find it pays to know the "how" of KELLERFLEX and why the "Series M" is the most versatile machine in the shop. Just send a card for your copy.

Some of the NEW FEATURES . . .

This Machine has 16 constant shaft speeds — 1000 to 6000 rpm, or 2000 to 12,000 rpm — obtained by pulleys*. Upper photo shows how a simple twist of the wrist changes speeds in the standard range; no tools required. Lower photo shows how cable is piloted (on ball bearings) for smooth operation — away from the pulley, a design feature to protect operator and work. Standard heavy duty ¼ to ¾ hp. motor with overload protection. "Series M" KELLERFLEX comes to you permanently balanced for floor or bench stand or suspension, with standard fittings for standard equipment.

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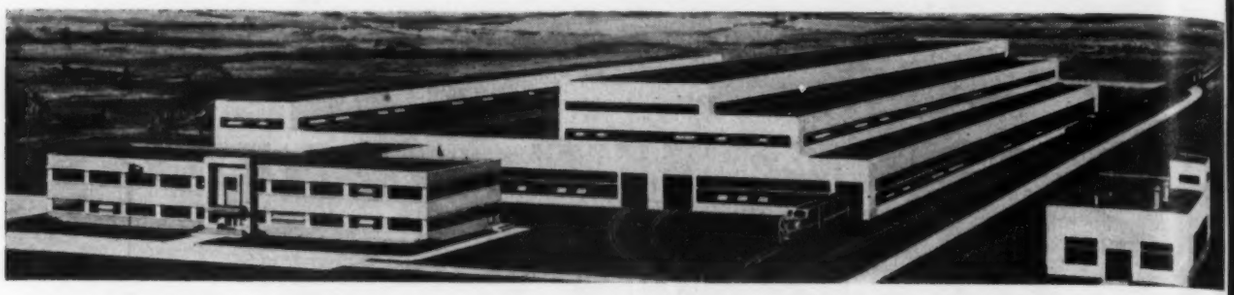

CANADIAN DIESEL PLANT: This is an artist's conception of the new plant of General Motors Diesel, Ltd., London, Ont., where diesel-electric locomotives will be produced. Construction will start immediately and new stream-lined diesel locomotives are expected to be in production by mid-summer of next year.

auto engineers even before the new K-F Traveler appeared. Today, its days are numbered. Except for some wood trim attached to an all-steel body, it is a safe prediction that no wood station wagon models will be built in Detroit after 1950.

Automobile Labor Trend Waits on Steel Board Findings

The automobile labor picture appears to be unfolding according to plan. That is to say, at the moment practically everything is waiting on the findings of the steel fact finding board, scheduled for release by Sept. 10. Once the recommendations of the board are definitely known it is confidently predicted here that the current war of nerves between Ford and the union, now burning on a slow fuse, will explode into one of the more spectacular chapters in Detroit labor history.

Ford and Union Firm

At the moment, Ford and the union are down to the discussion of economic problems, having found common ground for the solution of their many contractual difficulties. However, there are no visible indications that either side is moving a step from the economic position each assumed at the beginning of the negotiations.

The UAW top policy committee met this week to discuss "strategy and timing" of a possible Ford strike. Unless an extension is granted by the Michigan State Labor Mediation Board (a likely step in view of the situation now developing), the union will have to serve its 5-day notice of termination of the Ford contract or else seek an extension of the 30-day clause in the recent strike authorization.

While an adverse interpretation of the state labor law could require another costly Ford election if the union chooses to wait beyond Sept. 12 to strike, it hardly seems possible that both the union and the company will fail to reach agreement on an extension of the present contract.

While the report of the President's fact-finding board will undoubtedly change the situation overnight, there are no indications at the moment that the union and Ford are any closer together economically than they were when negotiations got under way nearly three months ago. The recent announcement that GM would not decrease its wage rate has given Ford a little elbow room that it did not have before but the economic position of the disputing parties has hardly been revised to any great extent by either side.

Strike Would Be Costly

Should another Ford strike occur, it will be a costly one, particularly if the stoppage is extended. This week the Detroit Chamber of Commerce got around to figure out the overall cost of the 23-day Ford strike earlier this year. Here are some of the estimates prepared by the board and reduced to an estimated cost per day of another Ford strike. Assuming these figures are accurate —and they will undoubtedly be challenged by the UAW-CIO—the total cost shown may be multiplied by the days duration to compute the aggregate cost of strike to the groups included in the computation. Figures shown are for the Detroit area only.

Ford workers—lost wages	$780,000
Ford dealers—lost sales	283,000
Ford suppliers—lost sales	870,000
Carriers—lost freight	61,000
Food, clothing, housing suppliers' loss	525,000
Medical profession losses	42,000
Personal taxes, insurance, etc.	76,000
Detroit Street Railway loss	9,400
Transportation, other goods and services lost	139,000
Total	$2,785,400

Engineers Are Designing Length Out of Cars and Trucks

Automobile engineers are designing a lot of unnecessary length out of their vehicles.

This was evident in the new Buick where a lot of space occupied by the grille was eliminated. A similar change has been made in the new GM trucks which claim to have the shortest front-bumper-to-rear-of-cab measurements of any trucks on the market today.

Truck designers are becoming increasingly aware of the necessity of offering maximum payload in a given truck or trailer. It is also recognized that limitations in many states on the overall length of truck-trailer combinations are going to play an increasingly important part in the design of motor trucks for tomorrow's highways.

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THE FEDERAL VIEW

THIS WEEK IN WASHINGTON

Government's "five percenter" investigation proves very little . . . Maritime Commission seeks funds for ship repair . . . Assistance expected for nonferrous mining industry.

by Eugene J. Hardy

Washington — The current investigation of the so-called "five percenters," or to use the more proper terms—management counselors and business agents—has thus far served to prove little more than the fact that the President's military aide, Maj. Gen. Harry Vaughan, is a good-natured, bumbling, ineffectual individual who glories in his association with the White House and hasn't yet learned to say "no."

The Senate Expenditures Subcommittee, headed by Sen. Hoey, D., N. C., in its many weeks of hearings has turned up nothing that indicates that the business agents and management counselors who abound in the Nation's Capital are a bunch of scoundrels. Nor have there been any squawks, except from one headline-hunter, from the large number of firms who employ such individuals who are skilled in the ways of official Washington.

It would appear that most of these firms are satisfied with the services rendered by this group of experts, numbering well into the hundreds. Nor has the committee been able to come up with anything very damning regarding the suspended major-generals, heading up the Quartermaster Corps and the Chemical Corps, who were accused of improper dealings with the sole management counselor who has thus far been the object of the Senate inquiry.

In fact, there are rumblings throughout the Pentagon which seem to indicate that Secretary of the Army Gray acted rather hastily in suspending these two career officers. Certainly, the most they can be accused of, in the light of the testimony thus far, is minor indiscretions.

May Require Registration

But despite the inconclusive developments to date, Sen. Hoey talks about introducing legislation which would require all management counselors to register with the federal government, stamping them as something unclean and apart from the general run of citizens. The legislation would be similar to that now covering Washington's corps of lobbyists and would require all firms seeking government business to register the names of all persons hired to deal with the government.

Any agent would also be required to register with the departments with which he has business dealings. In other words, it's the old Washington story, which comes up regardless of the minor nature of the problem involved, "pass a law."

Nonetheless, it is still obvious to anyone familiar with Washington that for the average businessmen to run the gamut of the government's red tape without expert assistance is sheer folly. This is true, despite the fact that a Military Procurement Information Center has been established, the Commerce Dept. is providing procurement information at all of its offices, and the Bureau of Federal Supply will supply a list of federal purchasing officers merely for the asking.

With the Administration bartering its influence on a national and international scale, it's a rather odd commetary for a Senate committee to go on making headlines with its investigation of the alleged influence exercised by the President's military aide, who has never been known around Washington for an abundance of tact and good sense.

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Maritime Commission Hopes Congress Will Approve Funds

The Maritime Commission is hoping that Congress will approve an additional $25 million appropriation for the repair of 134 ships in the reserve fleet. The Senate Appropriations Committee has already agreed to hold hearings before adjournment. The fight for the money in the upper chamber is being led by Sen. Magnuson, D., Wash.

The move has a strong national defense appeal, since little has been done to maintain military auxiliary vessels since the end of World War II. It is backed by the Joint Chiefs of Staff. Supporters are also plugging the theme that it will help employment in private shipyards, which has dropped almost 50 pct in the past 2 years, thereby dissipating a vast reservoir of trained personnel.

The subject has been kicking around ever since the Maritime Commission was charged with the responsibility of maintaining the reserve fleet in the Ship Sales Act of 1946. Lack of approval from the Bureau of the Budget has blocked funds for this purpose every time the problem has come up.

Appropriation Turned Down

For example, last summer Maritime asked for funds to repair 910 vessels and was turned down. Early this spring, the Joint Chiefs of Staff recommended the $25 million appropriation as a starter and urged additional annual appropriations until at least 439 military auxiliary vessels now in the reserve fleet are placed in condition. The Bureau of the Budget again said "no." and suggested that since the project was given defense priority, the money be taken from military funds. The military agencies refused.

Therefore, the only way to get the program going during the current fiscal year is to get a supplemental appropriation through Congress before adjournment. Chances are not much better than 50-50.

Senate May Vote Assistance For Nonferrous Mining Industry

There's a better - than - even chance that the Senate will vote assistance for the copper, lead, and zinc industries before the year is out.

Capitol Hill thinking on the subject actually is pretty sharply divided, but a strong segment of western senators and representatives is pushing for enactment of a bill sponsored by Sen. O'Mahoney, D., Wyo., which provides federal funds for exploration and conservation of copper, lead, zinc, and other minerals.

House approval of such legislation is in doubt. Since 1946, when wartime provisions for subsidy payments expired, Congress has failed repeatedly to produce legislation agreeable to the industry and to the Interior Dept. There is little to indicate that complete and final agreement can be reached this year.

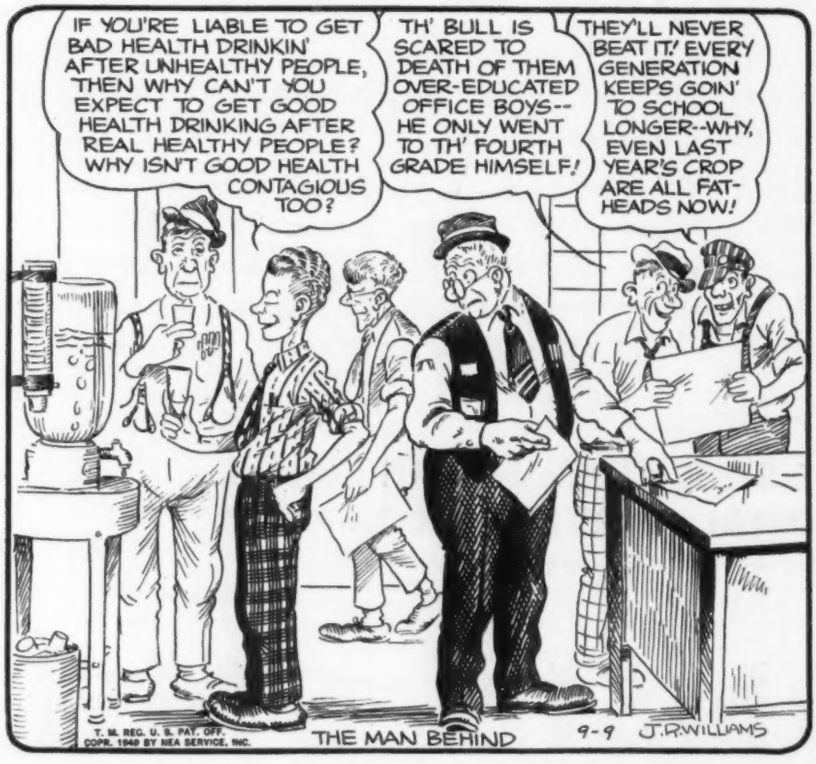
Few members of Congress doubt that a substantial part of the domestic mining industry has fallen upon bad times. Unemployment is wide-spread in many mining areas. Many segments of the industry are in desperate need of some sort of aid.

Wary of O'Mahoney Bill

Nevertheless, a number of congressmen, as well as many persons within the mining industry, are wary of the O'Mahoney measure in its present form because of fears that Secretary Krug and the Interior Dept. would own the industry "body and soul" if the bill became law.

Under the O'Mahoney Bill, exploration would be stimulated by the government's sharing with mine operators the cost of a project which offers reasonable promise of the discovery of an unknown or undeveloped source of metals or minerals, and which could not be carried out without government cooperation.

THE BULL OF THE WOODS — By J. R. Williams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TH' BULL IS SCARED TO DEATH OF THEM OVER-EDUCATED OFFICE BOYS-- HE ONLY WENT TO TH' FOURTH GRADE HIMSELF!
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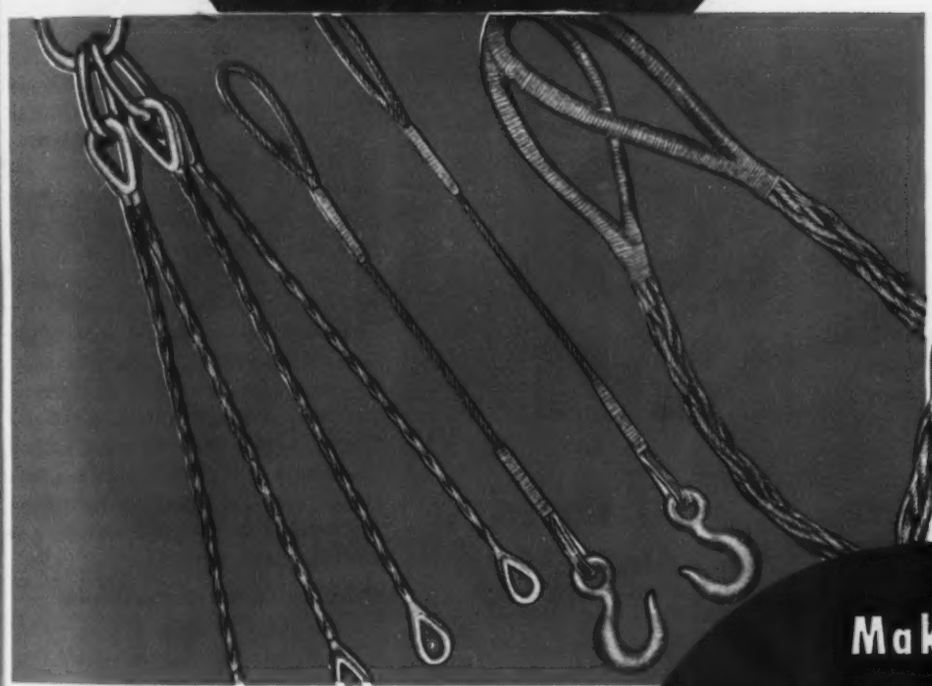

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WEST COAST PROGRESS REPORT

Far West users and distributers of steel products wonder what future policies of Columbia Steel's new sales team will be.

Digest of Far West Industrial Activity

by J. Reinhardt

San Francisco—"What policy and procedure will Columbia Steel Co.'s entirely new general staff sales team come up with? How is this U. S. Steel Corp. subsidiary now going to operate salewise west of the Rocky Mountains, under its new management, with its new facilities and in view of radically changed factors in the Pacific steel equation during and since the war?"

These are questions of first concern to every durable goods manufacturer, fabricator, steel warehouse, distributor and incidentally to all competitors operating on the West Coast. Within the past year, while many firms, many markets and many other factors have settled down and cleared up, Columbia's picture has seemed to become more confusing, more uncertain and of even greater concern to thoughtful operators in the industry outside of the corporation's organization. Instead of clarifying, new complications and question marks seem steadily to appear.

In the good old, long-gone prewar days, Columbia had a highly and carefully organized selling organization, skillfully and effectively functioning. It marketed not only its own manufactured merchant products, considerable in variety but limited in quantity and range, but also and with equal effectiveness sold products of other subsidiaries of the corporation, American Bridge, National Tube, T.C.I., Carnegie-Illinois and others.

War Stimulates Industry

Its comparatively small mills at Pittsburg and Torrance were virtually overgrown job shops in the field of steel manufacturing with limited, primitive, yet remarkably effective and efficient facilities for rolling merchant products, light structurals, sheets, tin plate, wire products and castings for the diverse requirements of the far flung but industrially thin far western market.

Came the war and a violent stimulus to larger scale industry on the West Coast. Columbia's former traditional serenity and well-defined, steady course was disturbed with all the others, by growing pains, by death and retirement, and by major consolidations and acquisitions of greatly increased production and manufacturing capacity. Integration with the Geneva blast furnaces, open hearths and mills in Utah and addition of the big continuous sheet and tin plate mill at Pittsburg with a similar major modern plant to be added at Torrance within the next 2 years radically alters the old orderly picture. Henceforth, Columbia must produce and sell a big quantity of flat products. Acquisition of the Consolidated Steel Co. and with it the Western Pipe & Steel Co. greatly increases fabricating operations and commits the company to secondary manufacture.

Changes In Sales Personnel

Since the disturbed war period there have occurred changes in top sales personnel of corresponding moment. The deaths of William A. Ross and Frank B. DeLong, the retirement of J. Lester Perry and resignations of Charles S. Conrad and H. C. Wittenburg have removed principal sales executives trained in and accustomed to the old order.

A year ago able, aggressive, courageous Alden E. Roach became president. Trained on the West Coast as an independent big operator he started to rebuild the organization and man a new team to take the field under his general direction and responsibility. The new principals are just taking their places but what their system or type of game will be, to what

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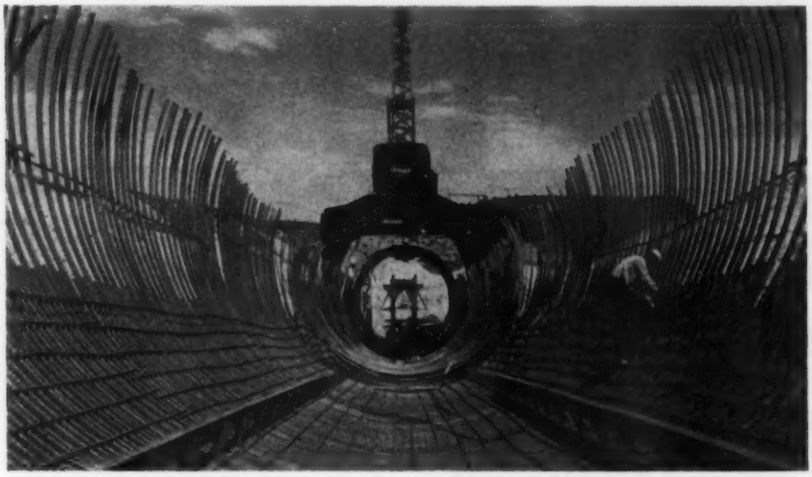

RIBWORK: This longitudinal view of the Soap Lake Siphon job in the Bureau of Reclamation's Columbia Basin Project of eastern Washington shows the outer curtain of reinforcing steel for the lined portion of the barrel. The $7,614,000 siphon will have 4500 ft of steel-lined concrete pipe and 8400 ft of unlined concrete pipe. The lined portion is 22 ft 4 in. ID, with a 20¾ in. concrete shell. The unlined portion will have an ID of 25 ft and a shell thickness of 2 ft.

fields they will hit, and how they will handle the ball becomes the most insistent question within the industry on the Coast.

New Sales Head Takes Over

O. L. Pringle has just taken over as vice-president in charge of sales. He is in his early sixties, a keen, colorful, magnetic steel operator with Pittsburgh and Chicago experience, but previously a production and operating man. One of his chief lieutenants has just joined the organization in the person of Harold Q. Noack, 48, a California native son who graduated from the state university in chemical engineering, spent 20 years with Hubbard & Co. and the past 4 years as Pacific Coast manager for Phelps Dodge Copper Products Corp. He will apparently be responsible for contact and customer relations at the top sales level.

Of equal rank as direct assistant to president Roach will be Robert E. Williams, a man about the same age who has grown up in the organization and has more recently been concerned with programing and coordination of sales and production. He doubtless will bridge the gap between the old and the new and contribute continuous contacts and the benefits of precedent and tradition.

Major suppliers of steel to the far western market have serious problems to consider and crucial decisions to make. Probably 75 to 80 pct of all volume comes from between 250 and 300 customers. But there are 2000 more customers in the area, smaller manufacturing plants, local distributors and warehouses. It is expensive and difficult to set up to serve both the small number of comparatively larger buyers and the large number of smaller ones. Yet Columbia as principal factor in the industry must somehow accept this challenge.

Sheets and Tinplate Needed

Take the subject of sheets and tinplate, for instance, and this is probably the hottest potato at the present time. Prewar the market west of the Rocky Mountains was good for an average of 300,000 tons of sheets and 400,000 tons of tinplate annually. Currently, only 10 years later, the market for sheets is 600,000 to 700,000 tons, more than double, and for tinplate something like 700,000 tons, almost double prewar. That modern continuous cold reduction mill at Pittsburg has a capacity of some 325,000 tons or more.

Customers are clamoring for sheets but so far the bulk of production has been tinplate and the less than 100,000 tons of sheets marketed from Pittsburgh this year will actually be less than prewar production from the now replaced facilities. The projected Torrance mill of equal capacity is expected to be primarily devoted to sheets, but it is 2 years away. Meanwhile old customers, little customers and remoter area customers are restive and unhappy. For the basing point decision, radically higher rail freight rates and uncertainty and higher cost of intercoastal water transportation have removed from the market all eastern and midwestern suppliers but Bethlehem.

Whereas prewar American Bridge Co. as a fabricator bid on and contracted for only very large projects where niceties of engineering and design practically eliminated local and independent fabricators, the present aggressiveness, competence and facilities of Consolidated Western make it a major outlet and incidentally, a principal competitor of many former traditional Columbia customers.

Therefore every purchasing agent west of the Rockies is watching and listening intently for any and every word and action from Messrs. Roach, Pringle, Noack and Williams, along with their associates and subordinates, to try to learn and understand what and how much to count on in the future from the U. S. Steel Corp. and Columbia.

Will Close Western Smelter

Salt Lake City—Murray, Utah, smelter of American Smelting & Refining Co. will be closed Oct. 1, according to R. D. Bradford, general manager for the company's Utah operations. It will remain closed indefinitely, he explained, because shortages of ore and other economic conditions do not warrant its continuous operation.

Some of the older employees, of the more than 250 affected by the closing, will be absorbed at the company's plant at nearby Garfield. About 40 additional men will be employed at the new $3.5 million anode casting plant now being built at Garfield, and 10 or 15 additional men at the new $6.25 million acid plant expansion at the Garfield Chemical & Mfg. Corp., Mr. Bradford stated.

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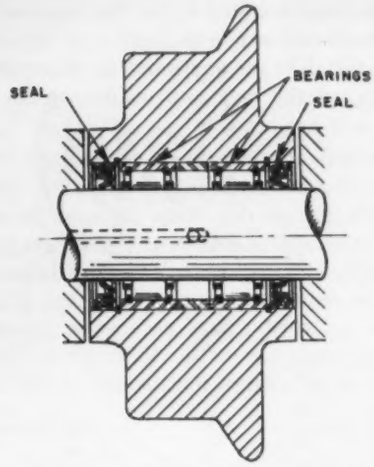

FIG. 11—Trolley wheel bearing seal.

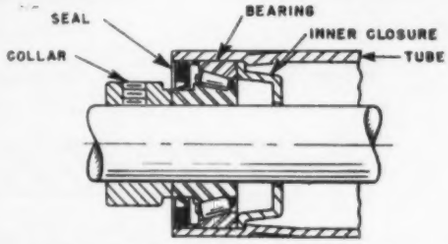

FIG. 12—Bearing seal on a conveyer idler.

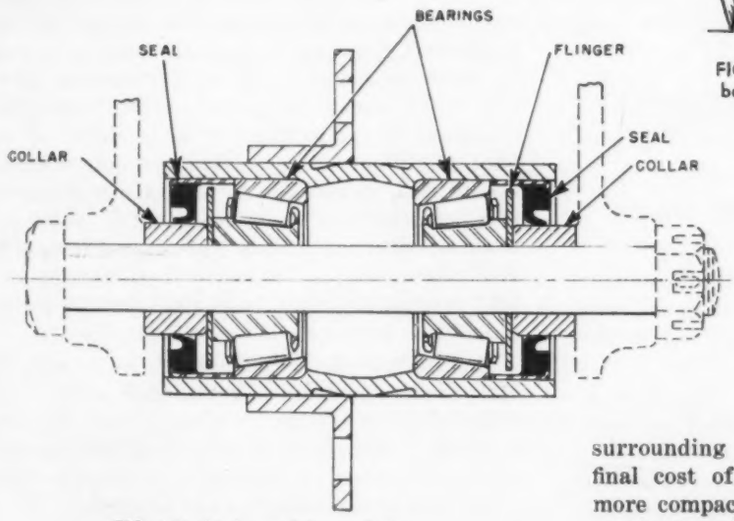

FIG. 13—Seals used in an industrial wheel roller bearing assembly.

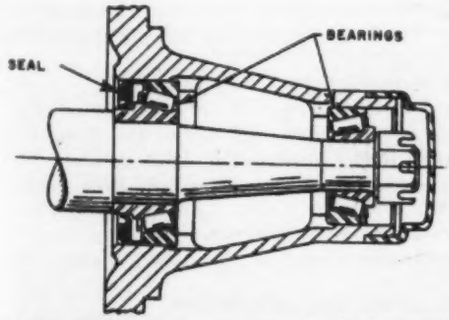

FIG. 14—Seal on a farm implement wheel assembly.

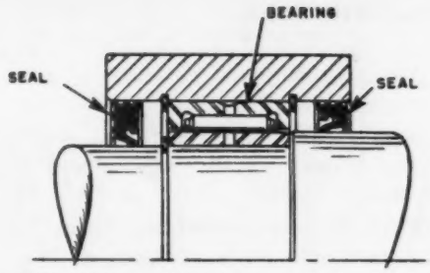

FIG. 15—Press fit seals for needle bearings.

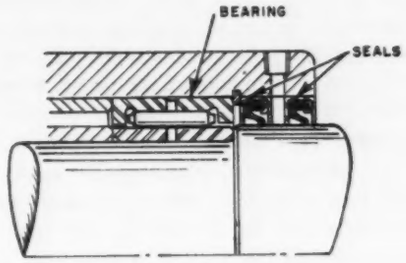

FIG. 16—Double press fit seals for needle bearings.

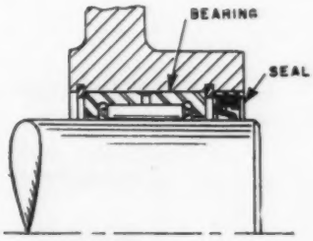

FIG. 17—Needle bearing seal for bearing without an inner race.

surrounding members, thereby decreasing the final cost of the assembly and resulting in a more compact unit. The needle bearing in this application is mounted in a straight through housing bore and is held in place with split retaining rings.

Another bearing and unit seal arrangement utilizing a heavy section needle bearing with hardened and ground outer and inner races is shown in fig. 16. Two seals are mounted in tandem with the sealing lips pointed outward to exclude foreign matter. Lubricant is injected between the seals at regular intervals. This procedure flushes out moisture or foreign matter through the outer seal and the presence of this lubricant assures that the contacting surface of the outer seal receives lubricant, thus preventing it from failing prematurely. Such bearing and

seal applications have functioned satisfactorily for long periods without replacement of either the bearing or seals.

Fig. 17 shows a commercial, spring loaded oil and grease seal with a heavy section needle bearing without an inner race. The bearing is mounted in a straight through housing bore and is held in place with split retainer rings. As with the seals in fig. 16, this seal is mounted with the sealing lip pointed outward. Slight escape of grease under the heel of the seal not only helps to exclude foreign matter, but lubricates the seal and reduces seal wear.

When commercial oil and grease seals used in combination with heavy section needle bearings, as shown in figs. 15, 16 and 17, are held in place with split retaining rings, it is desirable to install the retaining ring on the bearing side of the seal. This is suggested because the 0.030 in. total width tolerance on most standard, commercial, spring loaded seals, which when considered with the machining tolerances, may affect the location of the bearing.

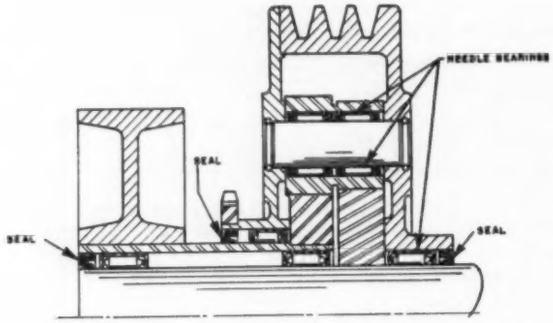

FIG. 18—Seal arrangement on a reduction gear unit.

Fig. 18 shows a special thin cross-section springless seal applied to a small reduction gear unit, with narrow cross-section needle bearings. The unit seals are pointed in to retain lubricant in the unit. These special thin cross-section seals are designed to press fit without counterboring into the same housing bores that receive the narrow cross-section needle bearings. They permit less material in the surrounding members, thereby reducing the bulk and weight of the units in which they are used.

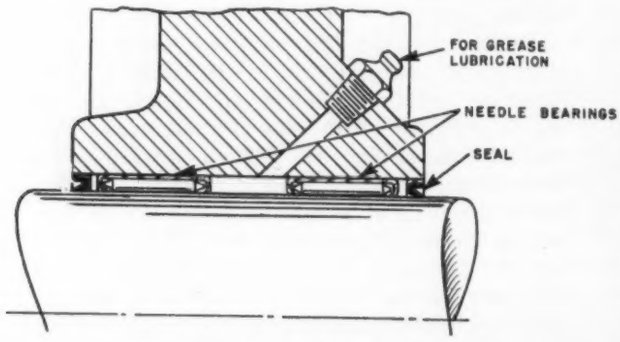

FIG. 19—Press fit seals for a top sheave.

A second application of these thin cross-section, springless seals is shown in fig. 19. Here, the seals are shown with narrow cross-section needle bearings in a typical top sheave hub for a skip hoist. Since grease pressure lubrication is used, the seals are mounted with the sealing lips pointed outward. Any escape of grease under the heels lubricates the locating surfaces and helps to keep foreign matter out of the bearings.

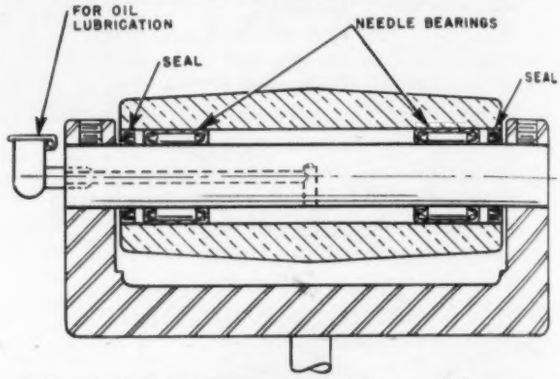

FIG. 20—Bearing seal arrangement for a roller spreader.

The sectional drawing in fig. 20 shows a typical narrow, cross-section needle bearing and seal arrangement for a roller spreader such as is used in the paper industry. This is representative of any roller, sheave or pulley needle bearing installation where lubrication is provided by an oiler. Two narrow cross-section needle bearings are utilized, mounted in combination with special thin cross-section unit seals. The seals are mounted with the sealing lips pointed inward to retain lubricant in the unit. This bearing and seal arrangement has been simplified as far as possible to produce a low cost assembly.

Manufacturers of commercial, unit press fit seals are in a position today to offer design engineers seals of standard constructions that are suitable for almost any kind or type of equipment and are prepared also to build special seals if and when special constructions are required.

Acknowledgment

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Quality Extras
—and why

By REBECCA H. SMITH

Chief Metallurgist,
Turbodyne Corp.,
Hawthorne, Calif.

SUMMARY: A more realistic approach to the problems of "quality" materials, particularly concerning acceptable defects, could greatly decrease present extra costs, the author contends in this penetrating analysis of the quality extra situation from the steel user's viewpoint. The problems posed by Magnaflux, X-ray and ultrasonic inspection methods are examined in detail.

EVERYONE is agreed that anything which is special, whether because of size, shape or quality, is entitled to a higher price than run-of-the-mill products. It costs more to make an unusual item, and this fact has been recognized in the establishment of various "extras." As far as size and shape are concerned, there is little argument on what is usual and what is special. But quality! One company's quality is another company's rejection.

The trouble is that *quality* is an indefinable characteristic. Whether the quality of a certain piece of steel is acceptable or not depends on the requirements of the finished part.

Many procurement specifications state that "Material shall be uniform in quality and condition, clean, sound, and free from foreign materials and internal and external defects detrimental to fabrication or to performance of parts."

Others go into more detail: "All material shall be uniform in quality and condition, free from pipes, seams, laps, cracks, slag, hard spots, porosity, slivers, scale, rolled-in scale, excessive nonmetallic inclusions, segregation, and other defects that might detrimentally affect its suitability for the service intended."

These specifications recognize the fact that no material is perfect. However, it is important to notice that there is no definite standard of acceptable defects, no matter how few or how small. Instead, the emphasis is on the requirements of the *end product*. That is why it is so important to have an understanding between purchaser and supplier as to the degree of perfection needed.

In the last analysis, it is the user who decides whether or not a defect will be detrimental, and he should tell the maker just what he wants. However, since the vendor is in effect promising to supply material which will be free from any such defect, it is also up to him to find out what is needed. Even if he has made similar parts for other companies, that is no guarantee that his manufacturing and inspection procedures will be suitable for another customer. Of course, it takes longer to place orders when the designing group must analyze each highly stressed part and define the exact requirements. It may take longer for the vendor to get his quotation in, when he has to figure on definite test and inspection procedures. Since he may not have as low a bid as a less meticulous concern, he should be sure to give the details which justify prices.

Even if the initial cost per piece is high, there is a net overall saving when contracts are arrived at by prior mutual agreement. Less time is required to get the desired quality; there are less rejections; there is better feeling between purchaser and supplier; and there is good reason to believe that the whole deal is (in the long run) cheaper for the buyer and more profitable for the seller.

The present high cost of quality extras (whether aircraft quality steel, X-ray quality castings, or ultrasonic quality forgings) is due to two factors. One is legitimate and expected—that is the increased cost of manufacture. In order to produce material with the very high standards of soundness, cleanliness, and uniformity which are needed in many aircraft parts, much extra work is necessary. The original raw material must be carefully selected and inspected; extra care and controls are necessary in manufacture; extra inspection is required; extra supervision is needed, and finally, additional records must be kept.

In spite of all these precautions, there are many things which can happen to ruin a heat's value as aircraft "quality," for example. The buyer really pays not only the cost of the steel he gets, but also the cost of the steel made and lost in an effort to produce the quality specified.

The other cause of high quality extras is legitimate from one point of view because it is a part of the cost of the finished accepted product. However, it is largely unnecessary. That is the extra tacked onto the price because of extraordinarily high rejections. Naturally, stressed parts such as those bought to specifications calling for "Magnaflux quality" are given more careful inspection than ordinary commercial parts, and the overall rejection rate is normally higher.

But the basic reason for very high receiving rejections—in some cases, as much as 90 pct of the order—is lack of understanding between purchaser and supplier. Both suffer from it, too; the purchaser by paying a much higher price than he should, and the supplier by making less profit than he should. The fault for lack of agreement on necessary quality may be either the buyer's or the seller's, usually both. Here is a check list for the purchaser who finds his prices and rejections both high:

Are the inspectors thoroughly familiar with the materials bought and the inspection methods used to determine quality? Do they, for instance, consider that Magnaflux indications on steel are necessarily defects? Do they realize that almost any inspection equipment can be adjusted to such great sensitivity that flow lines, grain boundaries, and other perfectly normal conditions will give indications?

One large steel producer reports that an entire heat was rejected as "not aircraft quality" because the magnetic particle inspection was made at such a high current density that flow lines appeared. An example of this situation is shown in fig. 1. Such inspectors make it hard for everyone. It is partly this fear of undeserved rejections for "indications" that makes many forgers hesitate to accept orders subject to ultrasonic examination.

Or does the purchasing agent drive a hard bargain? There are some company specifications so rigid that no one can meet them; they are unrealistic in that they demand perfection. Granted that occasionally a few castings or forgings may approach this desirable goal, it is still not economically practical to insist on it for production.

Sometimes the original fault lies in the design department of the purchaser's plant. Not entirely sure just what is needed, the uneasy engineer wants "the best there is" and therefore specifies 100 pct X-ray sound, ultrasonic inspection, and anything else he can think of to guarantee that elusive "quality." As a matter of fact, designers who take the trouble to make stress-marked drawings indicating locations where perfection is needed, and other areas where ordinary material is adequate, are much more likely to attain their desires.

In some cases, foundries actually cause shrinkage cavities in the most highly-stressed area of a casting in attempting to produce them X-ray perfect throughout. Sometimes the designers think that the specification covering inspection techniques also define acceptance standards, which is far from the truth. Naturally, in the

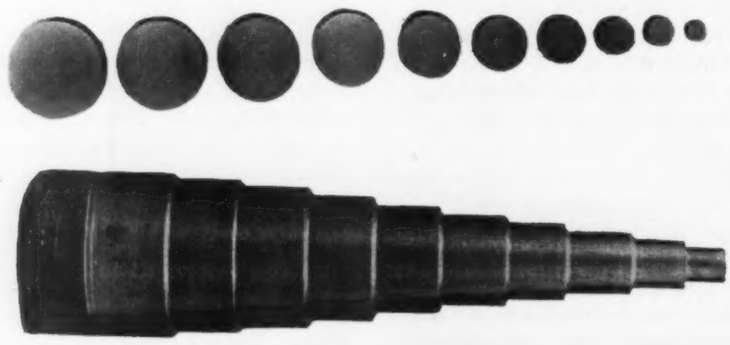

FIG. 1—These illustrations emphasize the necessity for intelligent use of modern inspection methods. The 3-in. step test bar on the bottom shows magnetic inspection indications on the smaller steps, while the macroetched disks at the top, cut from the step test bar, show complete uniformity. The indications on the smaller steps in this case were the result of increased current density.

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"It all depends on your viewpoint!"

absence of clear information on acceptable defects, inspectors do not feel like taking chances.

Suppliers who find their products coming back rejected in alarming numbers, might well look into the attitude of their salesmen. How many times, when trying to explain the exact requirements of a highly stressed high temperature casting to the foundry's salesman, have all technical explanations been brushed away with such a remark as, "We always make good castings; been in the business 40 years." Later, when the entire order is rejected for large hot tears in a critical area, the salesman laments that he "wasn't told." He should be told, *in writing*.

Or there is the other salesman who is so eager to get the order that he ignores explanations, and sometimes even suggests "We can make that. No need to write down all these things, they will just scare our production men." But the just plain lazy ordertaker who gets quotations without ever thinking or inquiring what the requirements are, probably does his share of contributing to high rejection rates. It seems incredible but there are actually people who send in a quotation, take an order, and start producing parts before they notice the specifications!

Even when salesmen pass along the desired standards, there are some self-satisfied producers who feel that they know better than the buyer. They ignore specified properties and resent rejections because "the way we make them suits everyone else."

Some suppliers blame their high rejections on the severe inspection at the purchaser's plant. From the user's point of view, any defect which would affect service adversely is a rejectable defect, no matter how it is found. For example, a crack is certainly a dangerous defect in a critically stressed casting, and the rejecting inspector cannot see what difference it makes how the crack was found. Conversely, what is a bad defect in one material or part may not affect performance adversely in another. Lester[1] recently made the point that "even a crack is not a rejectable defect if it will be under compression at all times in service."

The vendor may feel that rejections should be based on defects which he, too, can find, before shipment. If any unusual inspection method is employed—as using a 10X glass instead of normal eyesight—he often resents it. It comes back to a question of what is understood and customary.

Many materials are sold with the proviso that "defects appearing during fabrication shall be cause for rejection." This is necessary in some cases because the condition as-received precludes complete inspection. If covered with forging scale or sandblasted, rejectable defects may pass unnoticed. Some companies who make ultrasonic inspection a part of their receiving acceptance, find that sellers will not accept a rejection based on that inspection method. Instead, the parts are cut through the area which the ultrasonic inspection indicated as defective, and are then rejected (after Magnaflux) as failing "aircraft quality."

In establishing acceptance standards, there is the same economic question each time: Is the extra service resulting from 99 pct perfection worth the extra cost? The writer believes that a realistic approach by both purchaser and supplier to the problem of "quality" materials could greatly decrease this extra cost.

If purchasers will decide what defects cannot be tolerated and in what areas, and how they are to be determined; and if vendors will discuss inspection procedures used in manufacture and as a basis for acceptance, many rejections can be avoided. And the price should go down.

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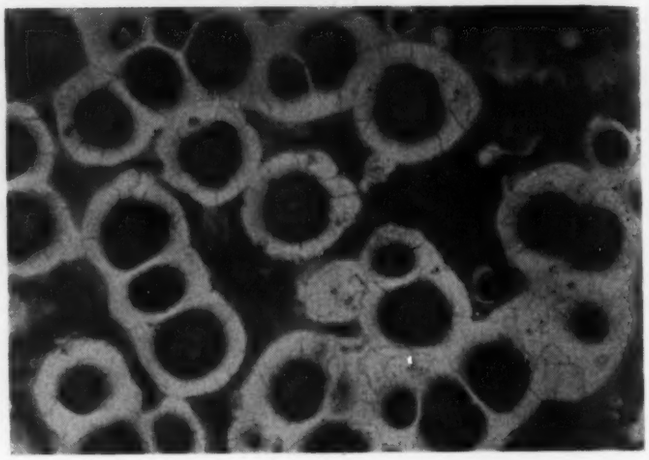
[1] "Ultramodern Supersonics and X-Ray," *Metal Progress*, July 1949, p. 64.

A Graphite Nodulizing Alloy



Naval Research reports on use of alloy containing 8 pct Mg in 50 pct ferrosilicon carrier

By E. T. MYSKOWSKI

and

R. P. DUNPHY

Naval Research Laboratory, Washington

A NODULIZING alloy containing approximately 8 pct Mg in a 50 pct ferrosilicon carrier has been developed at the Naval Research Laboratory in the course of an investigation on the use of magnesium in the deoxidation of cast steel. Ferrosilicon was selected as a carrier because of its compatibility with magnesium at high temperatures and because an alloy of this type would not introduce undesirable elements into the steel.

When it became generally known that magnesium could be used to nodulize the graphite in cast iron, the Fe-Si-Mg alloy was introduced into molten cast iron with immediate success. All test heats were induction melted in a magnesia lined furnace and superheated to 2650°F for tapping. The iron was tapped into a clay-graphite crucible on the bottom of which was spread the Fe-Si-Mg alloy. Most of the heats were made of Armco iron with Mexican graphite and 50 pct ferrosilicon added in sufficient quantities to produce the desired compositions. A few heats were made of steel scrap base and the rest were made of commercial pig.

The initial heats were treated with a Fe-Si-Mg alloy prepared from a low aluminum ferrosilicon base. Subsequent heats were inoculated with an alloy prepared in a regular grade ferrosilicon base which contains approximately 2 pct Al. The reaction between the molten metal and the magnesium alloy was quiet with only a moderate amount of flare and no ejection of metal from the crucible. The treated iron was poured shortly after the magnesium addition. Holding power tests of the treated metal held in a crucible in a gas fired furnace indicated no loss of nodulizing power in castings poured 16 min. after treatment.

The first tests were made on low sulfur irons containing approximately 0.03 pct S. Introduction of 0.03 pct Mg resulted in refinement of the flake graphite, while some nodules were produced

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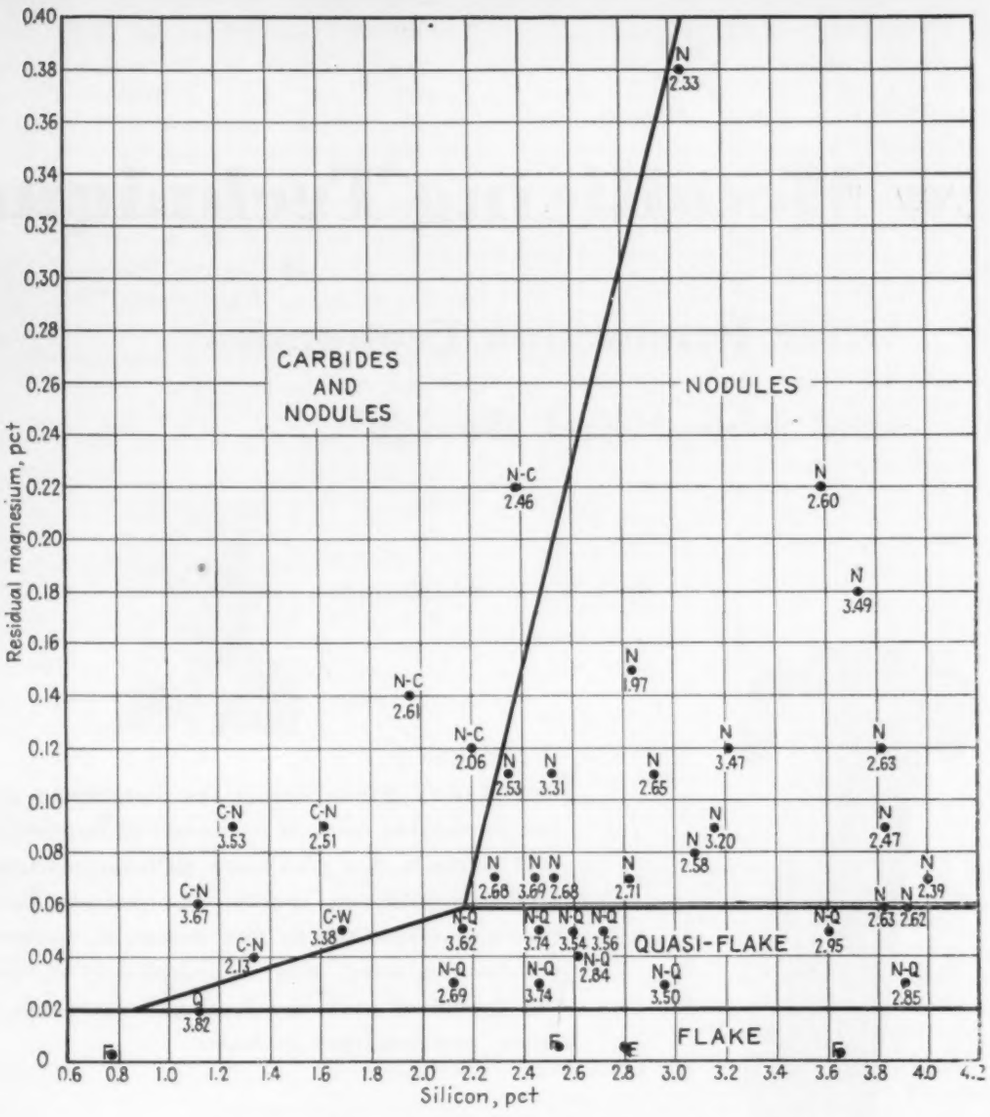

FIG. 1—Mode of occurrence of graphite in induction melted low residual sulfur irons (less than 0.04 S). Small numbers on chart are carbon contents.

with a 0.06 pct Mg addition. When 0.08 to 0.10 pct Mg was added, a completely nodular structure was produced, provided the residual magnesium was above 0.06 pct, and the silicon above approximately 2.2 pct. The carbon content apparently had relatively small effect in the range of 2 to 3.7 pct.

Silicon contents lower than 2.2 pct resulted in the occurrence of hard carbides (cementite) in the matrix of the iron. Increasing amounts of silicon first eliminate the carbide phase and then decrease the pearlite/ferrite ratio in the matrix. Variations in carbon content merely resulted in changes in the amount of nodular graphite present.

Part of the investigation covered the action of the alloy on irons with sulfur contents above 0.03 pct. It was found that while under laboratory conditions, 0.08 pct Mg was adequate to completely nodulize a 0.03 pct S iron, additional magnesium must be added to irons of higher sulfur content. Magnesium acts as a desulfurizer in high sulfur irons and as such, it acts to reduce the sulfur content of the iron below the 0.04 pct limit required for nodulation of the graphite. The actual quantities of the Fe-Si-Mg alloy to be added to high sulfur irons must be determined experimentally since there is some evidence that the condition of the melt has some bearing on the amount of magnesium required. Its presence as a residual in quantities greater than 0.08 pct in the cast iron does not have a deleterious effect on the structure of the alloy. Fig. 1 shows the effect of residual magnesium and silicon on the structure of cast iron.

Since this investigation was conducted mainly along metallographic lines, tensile data on keel block specimens required by the high shrinkage nodular cast irons are limited. However, tensile strengths above 80,000 psi, and elongations of 8 to 9 pct were obtained in the as-cast condition.

A patent application has been filed covering the use and composition of this nodulizing alloy.

New Metallizing Techniques

Offer Production Economies and Simplified Design

By JOHN E. WAKEFIELD
New York

SUMMARY: Wider use of the metallizing process for production work is the result of improved control methods that give more uniform coatings and higher application speeds. The author discusses latest developments in this technique, including a self-bonding alloy. Many practical uses of metallizing, including parts for heat and corrosion resistance, are described in detail.

FIG. 1—Gas flow meter of the flowrator type where the pressure of gas flowing through the graduated tube raises a float to a desired level.

FAR from being a maintenance process, metallizing is being used more and more in production. Bearing and packing areas are being coated with better wearing, better lubricating materials such as chrome-carbon stainless steel or nickel-chromium-boron alloys. Heavier sprayed coatings are replacing the thinner corrosion resistant coatings applied by ordinary hot processes. Electrical contacts and circuits are being sprayed onto carbon, fabric, plastics, paper, cloth, glass and wood. Production application of soldering and brazing alloys is being carried out with metallizing, prior to furnace brazing or soldering.

As these uses for metallizing expand, coating uniformity, particularly in the corrosion and electrical fields, becomes more important. Coatings must have the same electrical properties or the same wear and lubricating characteristics time after time. They must offer uniform protection against corrosion, and tight, fully brazed or soldered joints. In this respect, the recent introduction of gas flow meters for use with metallizing guns has helped remove the human error in metallizing gun operation. Flow meters make possible coatings with predictable characteristics, which can be duplicated at will.

A typical gas flow meter unit is shown in fig. 1. Acetylene passes from the pressure regulator on the cylinder into the bottom of one tube on the flow meter. Oxygen flows into the other. The flow of gases raises floats in the tubes. By manipulating the pressure regulator handles, the floats can be raised or lowered to correspond with the charts accompanying the meters. Thus, the exactly proper flow ratio of gas to oxygen can be obtained for any particular metal being sprayed. Even a relatively inexperienced operator can be

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sure of his flame setting and can duplicate it at any time, and thus the last real variable is removed from metallizing.

The speed of wire feeding into the gun, another variable, was solved some years ago with the introduction of a governor on the air turbine of metallizing guns. The governor controls the degree of atomization, oxide content and porosity, allowing these factors to be duplicated at will.

In addition, flow metered metallizing guns spray appreciably faster. In most cases, exact flame balance results in 15 to 20 pct more spraying speed. Since labor is usually the greatest single factor in metallizing cost, an appreciable cost reduction is possible. Less spectacular, but nevertheless worthwhile, are savings in gases and minor savings in metal because of greater spray concentration.

It was recently discovered that an alloy high in molybdenum can be sprayed with an ordinary metallizing gun and will bond itself firmly to smooth, even highly polished surfaces that are clean. This material bonds well to iron, steel, stainless steel, nickel and chrome-nickel alloys, magnesium and most aluminum alloys. It does not bond well to copper and alloys containing copper. Since the self-bonding metal is quite expensive, it is generally recommended as an undercoat for other sprayed metals. Any other metal, including copper and its alloys, will bond to it extremely well, since any sprayed metal bonds to any other sprayed metal. As an undercoat, only 0.0015 to 0.002 in. is needed.

The real advantage of the material lies in the fact that its use eliminates several of the mechanical preparation steps previously recommended, and in turn reduces costs as much as 60 pct.

Self-Bonding Undercoat Used

In the case of a cast iron pump piston being roughened with a rotary shaft preparing tool, before discovery of the self-bonding alloy, such a piston was undercut 0.030 in. on the radius below maximum anticipated wear. Both ends of the undercut section were dovetailed. Next, either square or V-type threads were cut and further roughened.

In the self-bonding undercoat method, all but the first step are eliminated. A light fast roughing cut cleans the surfaces, and the self-bonding alloy is sprayed on. The piston is ready for the final build-up.

Preparation time is drastically reduced in such a case. Furthermore, and in some work even more important, the objectionable features of threading and fracture lines in the base are entirely eliminated. In spraying, less metal is used, since the coating is going on a relatively smooth surface instead of having to penetrate to the bottom of the threads. Similarly, less metal is needed for finishing.

The self-bonding undercoat has one limitation other than the fact that it cannot be used on copper bases. It should not be used where a heavy coating, 0.050 in. or more, is to be applied to a flat surface or a shaft surface that is interrupted, as by a keyway or relief area. Here, stresses, set up by the cooling of the sprayed coating are generally high enough to cause bond failure, particularly if a high shrink metal like 0.10 pct C steel is used for buildup. On shafts with keyways it is advisable to use the grooving or threading method followed by the rotary shaft preparing tool.

This new method, in the many places where it can be used, greatly enhances the value of metallizing in the manufacture of turbine shafts, pump rods and packing areas, spindles and other parts where exceptionally good wearing qualities, lubricating qualities or corrosion protection is needed on limited areas. It is excellent for the surfacing rolls where the time for previous methods of preparation was considerable. Many cast iron, steel tube and similar rolls are now being metallized with stainless steel, Monel, nickel, or similar corrosion-resistant metals. The new bonding method also makes possible the application of good wearing steels and stainless to aluminum and magnesium bases.

The present production uses for metallizing fall into four well-defined categories. One is the group of mechanical parts already mentioned. A second is for protection of iron and steel structures and fabricated products against corrosion. A third is the application of coatings for electrical purposes. In some cases, the metallizing process is the only practical way of applying metals to non-metallic bases. Fourth is the rapidly increasing group of miscellaneous applications, such as preplacing of soldering or brazing alloys.

Typical of the uses of metallizing in new machinery is the single stage turbine.[1] Two shaft gland zones are metallized to prevent steam leakage and consequent oil contamination caused by rust-cut carbon gland segments. At one time, these shafts were made entirely from stainless steel. Metal and machining costs were high. Since only two gland zones were critical, the shafts were made from low-cost, easily-machined steel and these critical zones were metallized with high chrome-nickel steel.

Fig. 2 shows the three steps in the metallizing process. At the left, the gland zones have been undercut 0.020 in. below maximum anticipated wear, threaded with a square-nosed tool, 16 threads to the inch, and further roughened with a special rotary shaft preparing tool. The shaft in the center has been metallized to approximately 0.040 in. oversize. The one at the right has been finish-ground.

In the production of 680 shafts, only 544 lb of stainless steel were used, against 40,000 lb re-

[1] *See "New Developments Widen Metallizing Uses," by John E. Wakefield,* THE IRON AGE, *Mar.* 17, 1949.

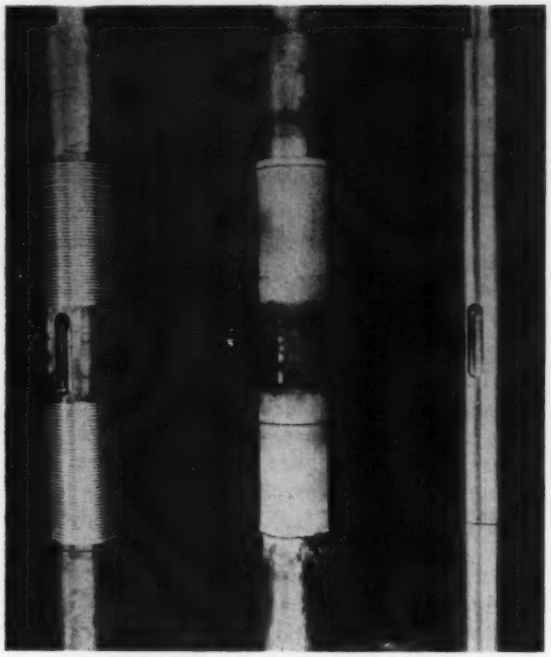

FIG. 2—Three steps in metallizing a shaft. At left, gland zones have been undercut below anticipated wear, threaded and roughened. The shaft at the center has been metallized oversize, and that at the right has been finish ground to size.

quired if the entire shaft had been of stainless. Savings in machine time exceeded the savings in metal.

Where one particular manufacturer prefers high chrome-nickel steel, another large manufacturer of turbines specifies Monel metallized zones. From a metallizing point of view, it makes little difference which is used. Either one can be sprayed with the same metallizing gun. Monel sprays about 10 pct faster than stainless.

Several manufacturers of centrifugal pumps are doing similar work on shaft packing areas. Nickel, Monel, bronze, stainless steels, and several other metals are being used for the various conditions encountered by pumps. A highly corrosion resistant, hard-facing alloy has been developed recently that can be applied with an ordinary metallizing gun and then fused at 1900°F.

This material has been used in the oil industry where corrosive conditions are often accompanied by severe abrasion. In one particular pump, metallized hard-facings increased service life to more than 600 hr.

This hard facing material, a nickel-chromium, boron alloy, can be used alone or it can be sprayed in alternate layers with other non-corrosive metals like Monel, nickel or stainless steel. The alternate layer method is easier to fuse, since the plastic zone is widened and it has less tendency to crack.

The use of hard facing alloys is limited to those parts that can safely be brought up to 1900°F for fusing the sprayed material. Where that can be done, it is excellent, because the coating is homogeneous and fused to the base as well. Such coatings are impervious to acids and other liquids.

Sprayed metals are quite promising on bearing surfaces where lubrication is critical. All sprayed metals except the fused coatings are somewhat porous. These microscopic pores not only absorb and hold appreciable quanities of oil, but also provide a means of escape for the minute metallic particles dislodged in the wearing-in process of any lubricated surface.

In many kinds of machinery, such as in textile and cement plants, it is very difficult to maintain enough lubricant in the bearing. Metallized parts, saturated with oil before assembly (especially with graphited oil), stand up for long periods without further lubrication. The effect is much the same as with sintered powdered metals.

There are three types of mechanical parts that should not be metallized. Sprayed metals will not stand direct impact. For that reason, they should not be used on surfaces such as the valve seats of internal combustion engines or on cams where sharp direct impact occurs. Crankshafts, however, are not subject to impact, but rather to intermittent heavy loads. Metallizing will stand up satisfactorily on cranks. Sprayed metals will not stand up on threads, gear teeth or similar places where stresses are great against narrow sections.

The third place where sprayed coatings should never be used is as races for ball or roller bearings. Balls and rollers tend to elongate the surfaces on which they operate. Sprayed metals won't stand such elongation. These conditions, however, do not apply to coatings of the hard-facing alloy sprayed on and then fused.

In Europe, particularly England, metallizing is used extensively for protective coatings. All sorts of tanks, refrigeration equipment, and fabricated steel components are metallized with zinc, aluminum, tin or lead. Zinc and aluminum are the most favorable, since they are both electro-positive to iron and steel. Therefore, they give electro-chemical protection as well as physical protection.

Heavier Coatings Applied

The importance of metallizing in this field is beginning to be recognized in the United States. Large manufacturers of vapor degreasers, refrigerator cold plates, outdoor hanger type capacitors, even speed nuts, are using metallizing to protect their products with zinc. Fig. 3 shows zinc being sprayed on cold plates for ice cream cabinets.

Heavier coatings can be sprayed than can be applied by any other method. Metallized zinc coatings are usually 0.010 to 0.015 in. thick, and often are as thick as 0.025 in. The ability to apply heavy coatings is important, because it has long since been proved that the life of protective

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coatings is directly proportionate to coating thickness.

A second advantage of metallizing is its low heat. Metallizing seldom raises the temperature of equipment being sprayed above the point where it can be handled comfortably with bare hands. Some parts are badly affected by wet processes too. In metallizing, the work is dry at all times.

FIG. 3—Zinc being sprayed on cold plates for ice cream cabinets to prevent corrosion.

A third advantage is in structural work, assemblies and sub-assemblies, where riveting, bolts or welding are used. By metallizing after complete assembly, rivet and bolt heads, welds and joints are given protection equal to the main sections.

A fourth advantage is cost. Some parts and equipment can be metallized at lower cost than they can be protected by other methods. Parts adapted to tumbling barrel methods fall into this category. Fig. 4 shows speed nuts being given a coating of zinc by metallizing guns set in the mouths of the barrels.

Similarly, pole-line hardware can be metallized

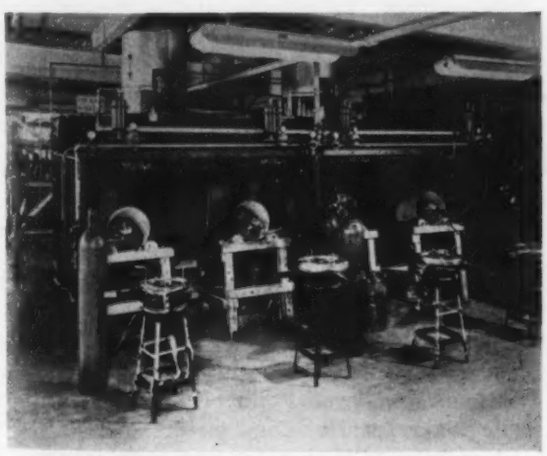

FIG. 4—Part adaptable to tumbling may be metallized at low cost. Here speed nuts are being coated with zinc by guns mounted in the mouths of the tumbling barrels.

in tumbling barrels. Salt atmosphere corrosion along the seacoast is a tremendous problem to power companies. Manufacturers of pole-line hardware have at least two grades, galvanized for ordinary conditions, and stainless steel for severe corrosion. Zinc coatings, sprayed in tumbling barrels give great protection at costs lower than solid stainless steel. In such cases, metallizing is often a compromise between adequate protection and cost.

In the field of heat oxidation, metallizing offers a compromise. Salt pots, pyrometer tubes, annealing covers and many other parts are very expensive when made of special alloys. When made of iron and steel they deteriorate far too rapidly. One large steel mill has reported an increase in the life of the covers they make from 90 heats for untreated steel covers to more than 250 heats for metallized covers. Metallizing cost amounts to about $25 per cover, effecting a large savings on these large units.

With automatically controlled guns and gas flow meters, metallizing is well adapted to production runs on parts that can be handled mechanically. Guns can be mounted in fixed position and the parts conveyed in front of them. By controlling conveyer speeds, exact coating thicknesses are maintained and costs frequently reduced.

Fig. 5 shows a set-up for metallizing incendiary bomb tail-cups with tin. While this was a wartime application, the conveyer system shows how similar parts can be metallized on a continuous production basis.

Fairly recently metallizing has been coming into use for applying electrical circuits to dielectric panels. Fig. 6 shows a radio chassis on the left that contains circuits sprayed through a stencil. At the right is a conventionally wired chassis.

There are three ways of doing such work with metallizing. The first, as in this case, is to sandblast the desired pattern through a stencil, and then spray aluminum, copper or the particular metal desired through the stencil. A second and better way is to mold grooves in the panel in the desired pattern, spray the entire panel, and then grind back on a belt sander or similar equipment. The grinding removes the excess metal, but leaves the desired amount in the grooves.

A third method, understood to be covered by patent applications, is to blast the entire panel, spray through a stencil, and hot-press the sprayed metal down into the panel, so that brushes or contacts may ride smoothly from circuit to circuit. The process often eliminates many soldering operations. Width and thickness of circuits can be varied at will. Bridging can be done by using both sides of the panel. Finally, and of great importance, almost any relatively soft metal can be sprayed onto almost any type of base material, plastic, fiber, cloth, fabric, glass, ceramics, and others.

FIG. 5—Metallizing may be adapted to conveyor belt production methods. Here, bomb tail-cups are being coated with tin.

There are many other electrical applications of metallizing now in use. Radio capacitors are made by at least two companies by spraying aluminum on fabric. The fabric passes in front of one metallizing gun that coats one side continuously then in front of a second gun that coats the other side. Carbon brushes are sprayed with copper for contact purposes. Circuits are sprayed across glass transformer windows.

Besides these three clearly defined fields where metallized coatings are being specified, there are quite a few production uses that do not fall into any particular group. One involves the pre-placing of soldering alloys by metallizing prior to treatment in a controlled atmosphere furnace. The other two concern the applications of metal to glass and ceramics.

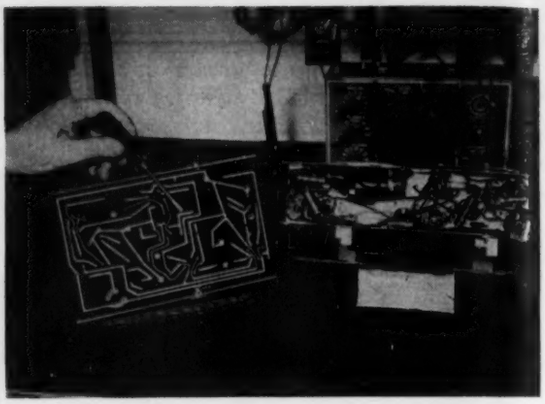

FIG. 6—Metallized electric circuits are inexpensive, simple to install and the effectiveness of circuit is accurately controlled. The conventional circuit at right is a duplicate of the sprayed circuit shown at the left.

One large manufacturer of fin type radiators conveys them through a battery of metallizing guns, half on each side of the conveyer. Solder is sprayed onto the tubes and fins just before the assembly enters the furnace. Once in the furnace, capillary action goes to work, and the radiators emerge with all joints securely soldered.

In the manufacture of gas meters, it is important that the index box have a soldered joint between the Pyrex glass window and the metal frame, to be gas tight, air tight, shock proof and resistant to repeated washings. This is accomplished by spraying the edges of the glass windows with copper, which permits them to be soldered to the frame.

A similar application involves the application of copper to porcelain insulators so that metal flanges can be assembled with a joint impervious to the passage of air or oil. A matte-glaze is applied to the porcelain when the insulator is in the unfired state. When fired, the matte glazed area is rough, and provides an ideal bonding surface for the sprayed copper. The insulator is then mounted in a lathe and a copper band sprayed on.

NEW BOOKS

"De Laval Engineering Handbook," edited by Austin H. Church and Hans Gartman. Book is a source of information on the design, operation and installation of pumps, turbines, compressors and gears. Contains several sections devoted to general mathematical, mechanical and fluid information, steam turbine data, centrifugal pump data, Imo pump data, compressor, blower and exhauster data, helical reduction gear data and worm reduction gear data. De Laval Steam Turbine Co., Trenton 2, N. J. $2.00. 270 p.

"Oil Hydraulic Power and its Industrial Applications" by Walter Ernst. Book covers development, theory, and practical applications of oil hydraulics. Detailed sample calculations and designs for hydraulic components, pumps and valves are given, and considerable attention is devoted to applications of hydraulic power, transmissions, motors and pipe flow. A number of elementary and complex circuits are illustrated and described. McGraw-Hill Book Co., Inc., 330 W. 42 St., New York. $6.00. 360 p.

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Gas Fired Annealing Furnace
Handles Railroad Tank Cars

SUMMARY: A gas fired furnace 52 ft long, 19 ft wide and 21 ft high, for annealing or stress relieving welded railroad car tanks and other vessels is described. Burner capacity is sufficient to bring the furnace, plus a 75-ton charge, to 1600°F in 3 hr. Wall and arch design, burner arrangement and controls are discussed.

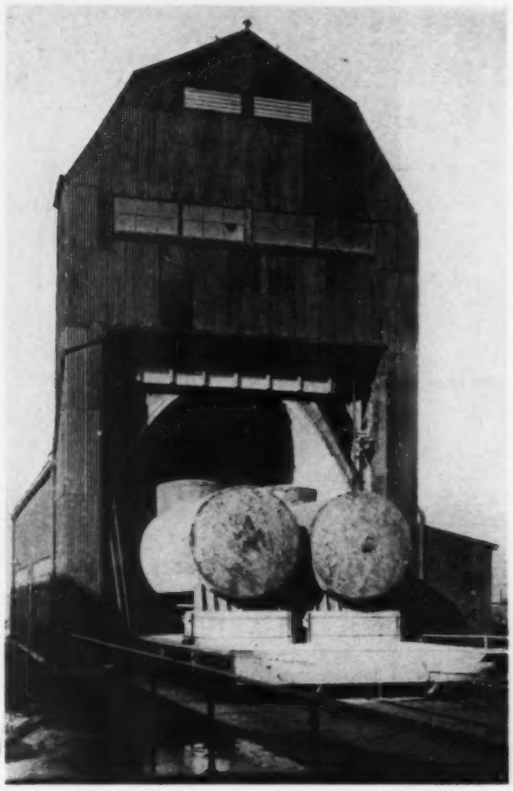

FIG. 1—View of the furnace showing method of charging two welded railroad car tanks at one time for stress relieving. Distance from the car to the arch is 21 ft.

A CAR-TYPE gas fired annealing furnace large enough to handle railroad tank cars has been built at the East Chicago plant of the Pressure Welding Div. of General American Transportation Corp.

Designed and built for General American by Jet Combustion, Inc., Chicago, the furnace, shown in fig. 1, accommodates welded car tanks and other vessels which must be annealed or stress relieved for code requirements.

The furnace is 52 ft long inside, 19 ft wide, and 21 ft high from top of car to the arch. The furnace car will accommodate a vessel of 16-ft diam and 50 ft long; or two car tanks side by side; or three 16-ft spheres 1 in. thick; or a 75 ton load. The car is equipped with 20 roller bearing wheels and electrically driven by means of a 10 hp motor through a fluid drive for extremely smooth operation at 50 ft per min.

Walls of the furnace, shown in fig. 2, are inclined at an angle of 7½° for a dual purpose: First to accommodate spherical shapes efficiently; second, to attain stability in wall structure. The walls are built of 34,000 Babcock & Wilcox 2300° insulating firebrick. The arch consists of 24,000 B & W 2600° insulating firebrick. An unusual feature of the arch is the true inverted catenary design or an unusually large span of 21 ft. The arch does not rest on the brick wall, but is supported by a steel structure which is an integral part of the building frame.

The door is also of unique design. It weighs 11 tons, operates electrically at a rate of 50 ft per min, is fully counterbalanced and equipped with pneumatic shock absorbers for smooth operation. It operates in vertical guides located on each side of the door. The lower portion of these guides are pivoted so that air cylinders can press against the door to effect a tight seal. Resilient asbestos, used in addition to the conventional overlap of firebrick, makes the seal.

The furnace car is constructed in five sections, each of which rests on four forged steel wheels. It operates on a 7½ ft gage special track and has a total travel of 180 ft. This permits loading and unloading with either yard cranes or cranes inside the shop building. The water seal between the furnace and furnace car is raised and lowered by air cylinders and is provided with a steam line to prevent freezing during cold weather. Water seal, car drive, and door mechanism are electrically interlocked. The tower re-

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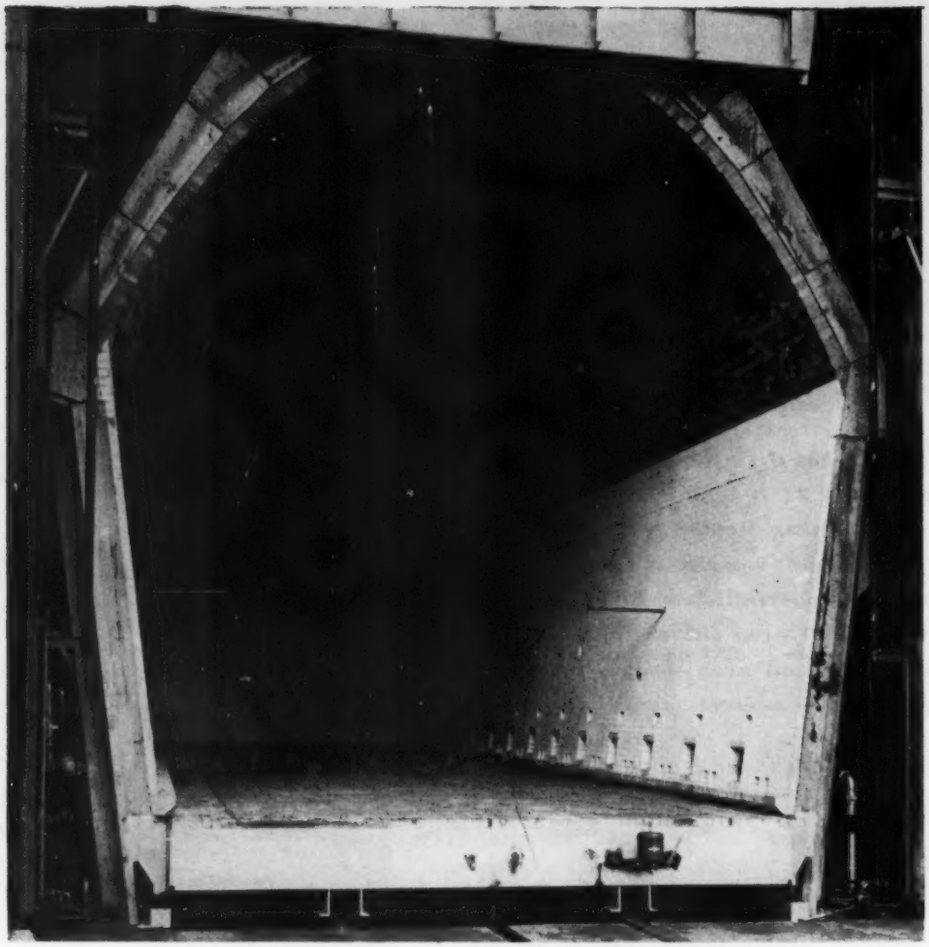

FIG. 2—Interior of furnace illustrating the catenary construction of the arch. Burner parts are visible just above the car bottom.

quired for the door in open position is 51-ft high and is provided with ventilating louvres.

The furnace is gas-fired with a burner capacity sufficient to bring the furnace, plus a 75 ton charge, to 1600°F in 3 hr. The maximum gas consumption is 30,000,000 Btu per hr. It also has the capacity to anneal stainless steel vessels at 2300°F.

Twenty-four North American luminous flame burners provide the necessary firing and are arranged to fire over the top of the car. They may be operated with either a clear or luminous flame, but in normal usage a clear flame is used. Combustion air is supplied by a 6 oz 30 hp blower.

Burners are divided into three zones of control and the air input to each zone is regulated by a North American motorized butterfly valve. Gas input to the burners is controlled by six atmospheric regulators which are cross connected to the air lines. In normal operation, when the furnace is being used to stress relieve carbon steel vessels, the burners are operated with a clear flame. A very desirable feature of these burners is a complete lack of radiation from the burner tunnels. Such radiation, if present, often results in non-uniform heating at stress relieving temperatures. Combustion gases are removed by flues located near the floor of the furnace. An additional set of flues is located in the arch; these arch flues are used only on high temperature heats.

A control house is located on the side of the building and houses a three-zone proportioning temperature control panel and a 12-point recording pyrometer which records temperature at any desired location in the furnace or work. Temperature is controlled by three Leeds & Northrup strip chart recording controlling pyrometers. These were provided with position adjusting control. Thermocouples may be placed in the work being heated for temperature recording on the 12-point instrument.

The building housing the entire furnace is effectively ventilated by a 24 in. x 47 ft continuous ridge ventilator. Fresh air is introduced at the bottom of the building by pivoted steel sash.

Due to the wide heat range incorporated in the designing of this furnace and gas firing, it is proving extremely flexible and adaptable to complicated heat treat problems. Its many automatic features simplify operation and the use of gas fuel under automatic control gives uniform and satisfactory metallurgical results.

How BUICK *Tools Up*
For small part production

By B. S. LARZELERE

Ass't. Plant Superintendent,
Buick Motor Div.,
General Motors Corp.

Summary: Good tooling is one answer to high costs in the manufacture of small parts. Techniques employed by Buick in broaching, centerless grinding, burring, staking and other operations in small part production are described in this article.

MANY small parts and assemblies are produced on a large scale in Plant 28 of Buick Motor Div., General Motors Corp., both for new cars and for replacement. Many operations may be classed as minor, but tooling and other innovations help keep costs within bounds, despite current high labor rates. Savings per piece or assembly often are small, but in the aggregate contribute significantly to overall economy.

In the American broaching machine setup shown in fig. 1, one man produces pinch bolt cross slots in 10,000 piston pins per 8-hr shift. Two inclined magazines each feed two pins at a time into each of two recesses in front of slides that reciprocate transversely on the bed of the machine in front of the broaches. After making the two cuts, the broaches return to their upper positions and each slide pushes the two pins into each Hydrogrip fixture, which locks securely as the broaches descend. The broaches cut across the four pins.

While the cuts are being made, the feed slides withdraw and two pins feed into insertion position from each magazine. When the cutting stroke ends, all four slotted pins are released and drop into a chute, the broaches make their return stroke and four more pins feed in and clamp to start the new cycle. Timing of feed slides is automatic and is synchronized with broach motion, the machine repeating its cycle continuously unless stopped by the operator. Slide covers were removed before the photo, fig. 1, was taken.

Production is less rapid, 1600 in 8 hr, in the La Point broaching setup, fig. 2, handling shifter rails for gear transmission. Parts must be hand loaded, and there are four slots on one side of the shaft and a fifth slot, at 90° to the other four, to be cut into each piece. Rocking type fixtures are used alternately, one being loaded while the other is forward into broaching position.

Two pieces are loaded in each fixture, locked automatically when in broaching position. After the first cut and while the broach is still down, left in fig. 2, the operator removes two rails and lays them in a tray before him while he loads two new pieces. During this period, the right set of broaches makes its cut and the left broach its return stroke. Then the left fixture rocks into broaching position and the right one into loading position. Two rails just broached are removed from the right fixture and the two on the tray are put into this fixture, ready for the second broaching. Fixtures are thus unloaded and reloaded alternately as production proceeds.

Cincinnati centerless grinders are rapidly and automatically fed with dowel pins of various lengths from a vibrating hopper of the type shown in fig. 3. The hopper has a ledge following a helical incline near the top of its inner diameter and the vibration causes the pins to hop onto this ledge, feed into a tube, and thence into the machine. As the only attention required is

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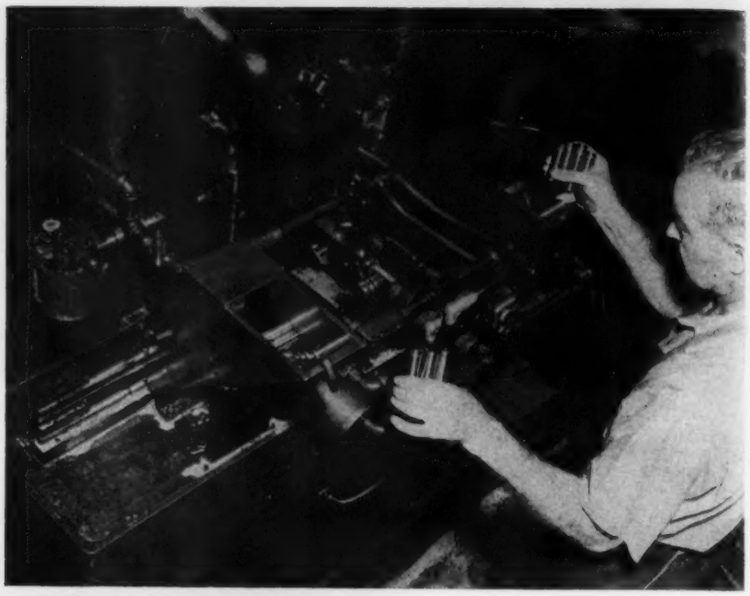

FIG. 1—Four piston pins have pinch bolt grooves broached in each machine down-stroke. Pins are fed from two magazines automatically by synchronized cross slides that push pins into Hydrolock fixtures.

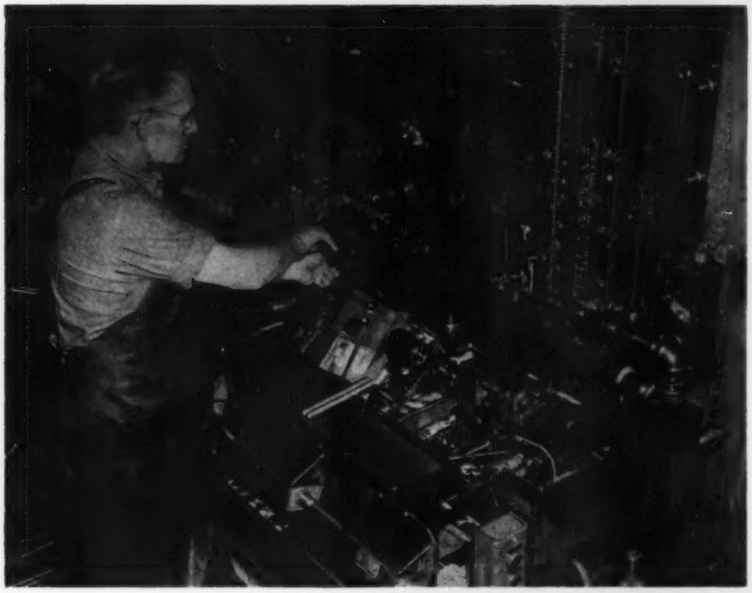

FIG. 2—Four slots in one plane and one in another plane 90° from the first are made in shifter rails on this broaching machine. Fixtures rock back for hand loading and unloading.

FIG. 3—A vibrator causes dowel pins to feed onto a ledge around the inner diameter of this hopper and thence into a tube for centerless grinding.

to keep the hopper supplied with pins, the labor factor for the grinding operation is nearly negligible.

Similar results are obtained for larger parts, such as shown in the hopper in fig. 4, mounted at the top of a pipe column. This feed costs little because, aside from the column and steel hopper box, the chief components are a geared motor driving by V-belt to a crank at the base of the column and connected by a rod to the reciprocating blade in the hopper.

This blade is arranged to reciprocate 50 times a minute and has a groove in its upper edge. The blade groove fills automatically as the blade moves to its lower position. At the top of its up stroke, the parts slide down the groove and into a tube that conveys them to the centerless grinder, at the desired rate. Again, the labor factor is slight, as it is confined to loading parts into the hopper and checking pieces for quality.

Slots are simultaneously milled in one end of four oil pump shafts in a conventional milling setup, but the cutter leaves a burr at sides of the slot. The burr is removed and edges beveled by an end mill having a beveled end in a Kent-Owens miller using the simple fixture, shown in fig. 5, with the shaft resting in the supports shown. After the shaft is put in place, it is advanced by a hand lever. A square spring plunger in line with the shaft has a tongue that fits the slot to be burred but is narrower than the slot.

This tongue keeps the shaft from turning as it is advanced against the mill, which bevels the edges of the slots and removes the burrs thereon. After edges on one side of the slot are beveled, the shaft is turned 180° and the operation is repeated. With this simple setup, the operator, who tends the milling machine that does the slotting, has time to burr the slots in four shafts during the 15-sec interval that this machine cuts the slots in the next four shafts. Thus, the operator is kept busy doing burring operations during an interval in which he would otherwise be idle.

Servo pistons used in Buick Dynaflow transmissions include a grooved circular flanged head and a stem or spindle. Formerly, the latter was pressed into the head hole in one operation and was then riveted over in a second operation. These yielded 125 assemblies an hr. Now, the same assemblies are produced at the rate of 400 an hr in the setup, fig. 6, using a light punch press. The spindle is first inserted by hand in the piston and then is forced home against its shoulder in the press as the lower face rests on the upturned bead of a button-like punch. This circular bead has an inner diameter that fits over the lower end of the stem, which has a circumferential groove near this end. Pressure exerted by the press in forcing the lower face of the piston against the punch bead is sufficient to force metal around the hole to flow into the pin groove, thereby anchoring the stem securely and positively.

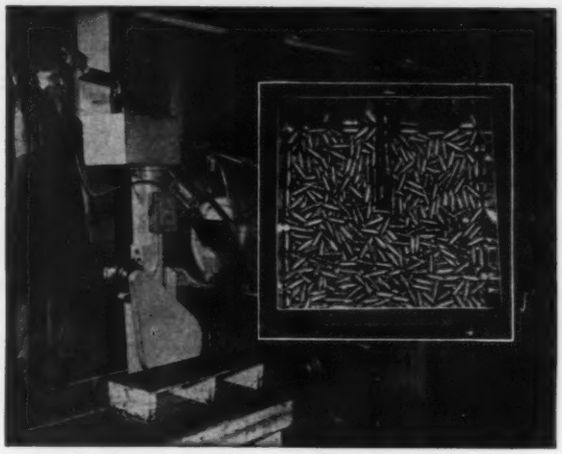

FIG. 4—Homemade gravity hopper feeding setup for a centerless grinder. The hopper, shown in inset, has its blade reciprocated by a geared motor on the supporting tubular column driving a crank at the base of the column.

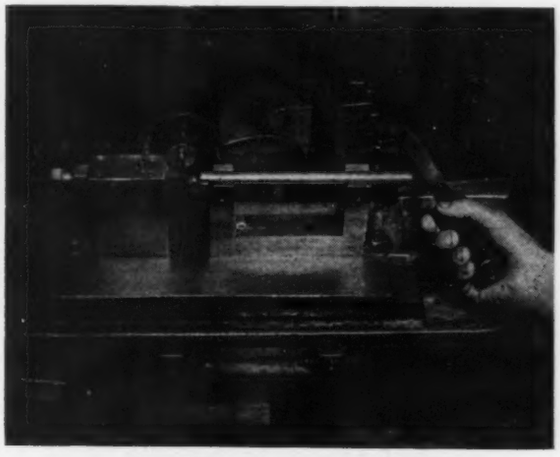

FIG. 5—The edges of a slot cut in the end of a shaft are beveled as the shaft is advanced across the tapered end of a milling cutter. The shaft is turned 180° for burring the second side of the slot.

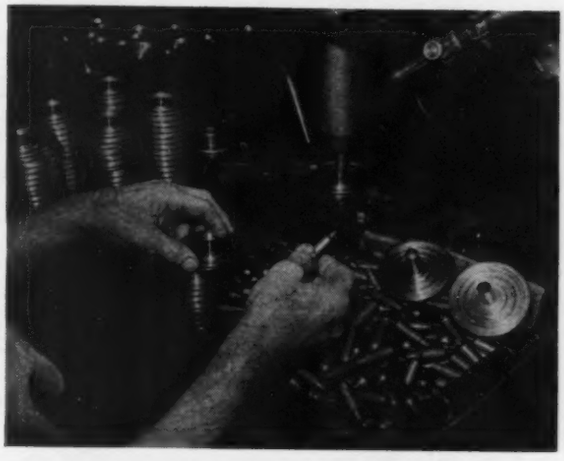

FIG. 6—In this press, stems are pressed into piston heads as they are supported in a fixture that includes, at its center, a staking punch having an annular bead on its upper end. This punch forces metal into the annular stem groove, locking the stem to the piston.

Edges of flanges at each side of piston grooves are not rounded to continuous radii, but have a flat at their outer diameters; and a flat or bevel next to the inner and outer face of one flange edge and a single bevel next to the inner face of the other flange. The outer edge (toward the stem) of the inner flange has a radius. There must be no nicks on flange edges, but some are bound to occur in handling the pistons through the shop. The setup in fig. 7 is used to remove the nicks by a rolling operation in contact with hardened wheels of mating contours.

Two setups are employed, one for a small and one for a larger size of piston, each using two sets of three rollers that are gear driven from a drillpress. Each piston is run in each set of three rollers in succession. The two front rolls of each set are on a slide moved by a ball toggle lever on a pinion shaft. The slide is drawn back to load and then is advanced to engage the pistons with the rolls as pressure is applied by the lever. The resultant rolling action removes any nicks.

Dynaflow transmission control valves have cross pins staked in the fixture shown in fig. 8. Formerly the pin ends were spun over and then dressed to make sure that they did not project beyond the adjacent largest diameter of the valve.

This fixture, using staking punches with annular beads on the working ends, does the job in one quick operation after the pin has been slipped in place by hand and the valve put into the fixture. Punches advance against each end of the pin by an air operated toggle below the bench when the operator presses the air valve.

Buick shifter control leavers are produced in two pieces, a formed shaft and a ball, each made on screw machines, as this reduces costs by about 8¢ each and still yields a first class product without making and machining forgings. Assembly of the ball to the shaft is done at the rate of 300 an hr in the fixture shown in fig. 9. The plunger, right, is drawn back for loading the shaft in a hole in its end then advances and locks by a cam.

In so doing, the assembly, with the ball already in place against a shoulder, is centered in the head at left in such position that four staking punches, each set at an angle, have their inner ends around a circle where the hole through the ball fits a shaft diameter. The staking punches are all advanced simultaneously when an air valve is pressed causing a plunger to force the punches inwardly.

Tooling such as described is typical of that introduced to save time and costs and could be applied in any shop producing similar parts. In most cases, the fixtures used are simple and moderate in cost, and of a type that any toolroom can fabricate readily.

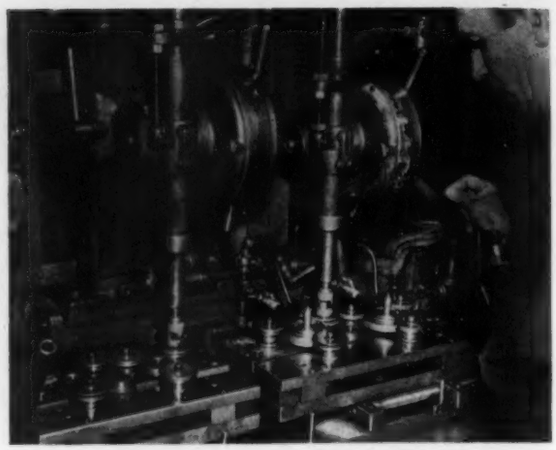

FIG. 7—These fixtures have rollers, gear driven from a drill press spindle connected to one roll. The forward rolls of each set of three are idlers on a slide operated by a lever with ball toggle pinion and rack. The lever applies pressure as rolling is done to remove nicks from piston flanges.

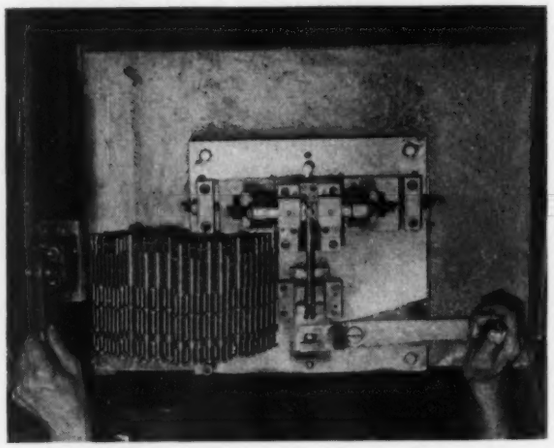

FIG. 8—Staking ends of cross pins to control valves is facilitated by this fixture. Staking punches advance by an air operated toggle mechanism below the bench.

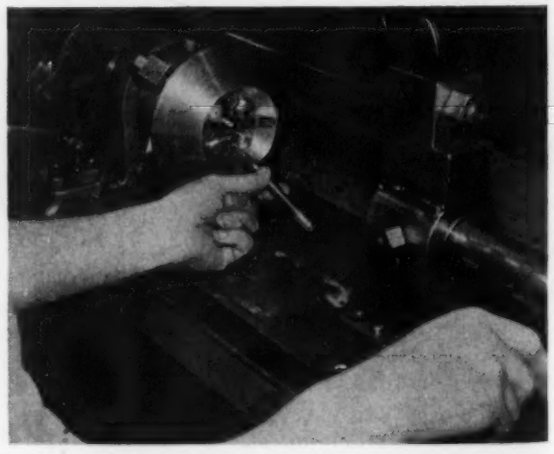

FIG. 9—Staking of balls to shifter levers is done in this fixture after the assembly has been advanced by a plunger, right, and the latter locked by a cam. The four staking punches, disposed at an angle, are air operated.

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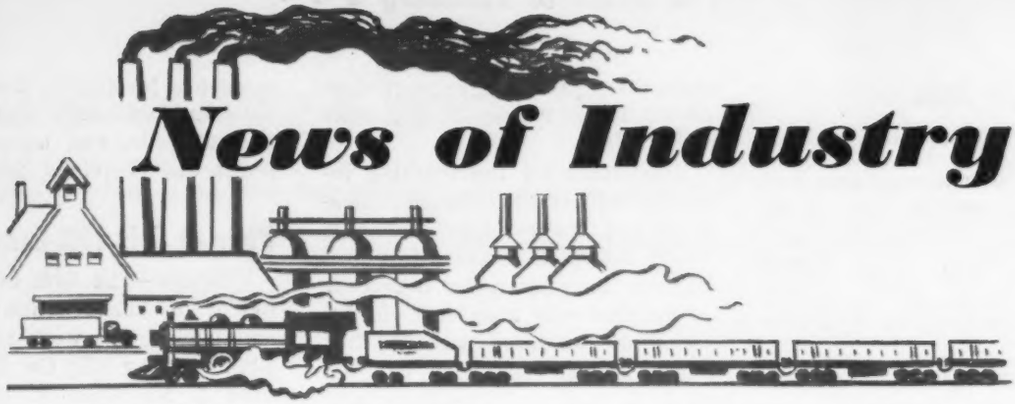

Truck Freight Rate Boost Likely on Steel

Agreement on load limitations will reduce truckers' income if rates aren't raised . . . ICC points to role of accidents leading to agreement—*By JOHN B. DELANEY*

Pittsburgh—An increase in iron and steel truck freight rates is likely to result from an agreement between truckers and major steel producers on load limitations, effective Nov. 1.

Assuming that everybody goes along on the informal arrangement, truckers who specialize in hauling iron and steel products will find themselves in the unenviable position of choosing between applying for a rate increase or struggling along with considerably reduced income. The truckers naturally would like to maintain the present favorable spread between their rates and those of the rails.

Says Accidents Led to Action

The Interstate Commerce Commission announcement of the agreement caught some truckers and shippers here by surprise despite the fact that participants in the Washington meeting with ICC included American Trucking Associations, Inc., generally recognized as national spokesman for the trucking industry, and the American Iron & Steel Institute, as well as other trucking groups and some individual steel producers.

The ICC said the action evolved from a disproportionate increase in the number and severity of accidents involving trucks hauling iron and steel products, and of reports of trucks loaded far beyond their normal braking and structural capacity. It said the arrangement had no relation, necessarily, to weight laws of the various states.

While the action was a volun-

Turn to Page 102

Berkman Buys Superior Sheet

Chicago—Borg-Warner Corp. last week announced sale of its Superior Sheet Steel Div., Canton, Ohio, to the Louis Berkman Co., Steubenville, Ohio. Mr. Berkman is president of Parkersburg Steel Co., Parkersburg, W. Va.

Roy C. Ingersoll, president of Superior Sheet Steel said the plant had served its objective of supplying steel to Borg-Warner's manufacturing divisions during the steel shortage. It was a subsidiary of Continental Steel Corp. until Dec. 2, 1946, when Borg-Warner bought it. It is a hand sheet mill rated at 140,000 net tons annual capacity, of which 90,000 tons is galvanized and 20,000 tons long terne.

Mr. Berkman said future plans for the mill were "entirely indefinite."

More Than a Holiday

Washington — President Truman's Labor Day statement reminded workers that Labor Day is more than a holiday for celebrating their achievements.

"This year, more than ever," he said, "it is a time for a sober evaluation of the problems that labor, together with all other groups in our country, faces in our complex world, and of our mutual responsibility in meeting them."

The president's statement was made at a time when his fact-finding board was considering recommendations following lengthy hearings on the steel-labor impasse.

His statement was regarded as being especially significant because 3 million workers will be free to strike within the next 30 days. In addition to the steel industry, these include the coal, auto, copper, shipping, longshoring, and electrical manufacturing industries.

Reopens Three Closed Plants

Pittsburgh—American Radiator & Standard Sanitary Corp. has reopened three of its plants which had been closed since spring. The plants are in Baltimore, Buffalo and Bayonne. Combined employment is about 2000 workers.

All three plants manufacture plumbing fixtures for home use. The Baltimore plant makes enameled cast iron plumbing fixtures; the Buffalo plant makes cast iron boilers and the Bayonne plant makes cast iron radiators.

Reopening of the plants was attributed to a "remarkable turn" in demand for plumbing and heating fixtures.

Truck Freight Rates

Continued from Page 101

tary one, it was learned that both shippers and carriers received the distinct impression that they had a choice of policing truck loading themselves or of facing possible ICC regulatory action with penalties.

Whether the agreement could be made completely effective was questionable. But there was little doubt that recognition of the problem, albeit in an informal way, would certainly minimize the chances that trucks will be leaving steel company docks overloaded after Nov. 1.

Heretofore, producers generally had taken the position that they had no control of or responsibility for the tonnage that a carrier asked to be loaded on his trucks. As a matter of fact, it was brought out at the ICC meeting that there is no power of placing such responsibility on the shipper despite the agreement to load only the maximum capacity stenciled on the truck.

Overloading Responsible

While the ICC emphasized the safety factor over the weight angle, observers were quite certain that the action was prompted at least in part by adverse publicity, particularly in Pennsylvania, on truck overloading. Pennsylvania state police weighing details have been diligent in checking violations, and several months ago reported a classic example of a truck carrying more than 100,000 lb, or more than 50,000 lb in excess of the state weight limit.

Spokesmen for the trucking industry deplore such flagrant violations and the resultant publicity, which makes all truckers look bad. But the temptation for a trucker to overload was a natural one because he was faced with the fact that his was usually a one-way haul.

Trucks Might Lose Business

Now many iron and steel haulers will find their costs increased because it will be necessary to use two or more trucks to haul a tonnage that they formerly could load on one. This will tend to reduce the overall tonnage hauled, because steel mills are set up primarily for railroad shipping.

Should the truckers choose to seek a rate increase, shippers could not be blamed for re-examining the relationship between truck and rail rates. Thus the motor carrier might conceivably lose good business to the rails.

With the railroad rate increase that went into effect Sept. 1, however, the increased spread between truck and rail rates added to the advantage held by the truckers. So the motor carriers could afford to increase rates and probably still retain most of their present steel business volume. The present rate per 100 lb between Pittsburgh and Detroit is 40¢ for trucks, 51¢ for rail; between Pittsburgh and Chicago, 51¢ for trucks, 63¢ for rail; between Pittsburgh and Newark, 55¢ and 62¢, and between Pittsburgh and Cleveland, 26¢ and 34¢.

POWDER METALLURGISTS: Among the outstanding authorities who participated in Sylvania Electric's recent powder metallurgy symposium were, left to right: Dr. Morris Cohen, Massachusetts Institute of Technology; Dr. G. F. Huettig, University of Graz, Austria; W. E. Kingston, chairman of the symposium and manager of Sylvania's metallurgical laboratories; Dr. Adolf Smekal, University of Darmstadt, Germany; and Dr. A. J. Shaler, Massachusetts Institute of Technology.

Pullman Gets 1000-Car Order

Chicago—The first railroad order of any consequence in months was booked last week by Pullman Standard Car Mfg. Co. The Louisville & Nashville R. R. ordered 1000 seventy-ton covered hopper cars which will be produced in Pullman's Bessemer, Ala. plant.

Most car builders are expected to finish up current schedules in October and no hope is in sight that the railroads will return to their wholesale buying of 1947 and 1948. The 1000-car order was just 50 less than total orders for May, June and July combined, and 179 more than were ordered during February, March and April.

Willys Gets Order from Turkey

Toledo — Willys-Overland is building nearly a million and a half dollars worth of jeeps, 4-wheel-drive trucks, station wagons and spare parts for Turkey, according to Marcel F. DeMuller, president of the Willys-Overland Export Corp. The orders were awarded to Willys through provisions of the U. S. aid to Greece and Turkey program.

OIT Limits Scrap Exports

Washington—Total exports of scrap during the final quarter of 1949 may not exceed 40,000 tons, the Office of International Trade decided recently.

OIT, in setting the export quota for the final 3 months of this year, pointed out that the 40,000-ton limit is the same as that in effect for the current quarter. Furthermore, exports of No. 1 heavy melting scap are barred, except in special circumstances, a prohibition already in effect.

The agency said that exporters may file license applications at any time and must continue to meet the requirements for certification of accepted orders and evidence of availability.

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Steel Labor Fact Finding Is Immense Job

Board started on major labor task of year under pressure to finish it in 11 days at most . . . It heard 4000 pages of speeches . . . Got 5000 pages of exhibits—By G. F. SULLIVAN

New York—With only 11 days at most to review a 4000-page record and 5000 pages of exhibits, the Presidential steel fact-finding board had on its hands the year's major labor problem. As it went into private sessions it had for a directive only President Truman's request that it make "recommendations to the parties as to fair and equitable terms of settlement."

Few expected that Messrs. Daugherty, Cole and Rosenman could come up with a recommendation that would satisfy both sides. The only hope was that they could suggest something that would permit one side or the other—or both—to back down from apparently inflexible positions.

If they recommend pensions and a substantial wage increase the steel companies will balk and a strike is likely. If they declare that pensions are not bargainable at this time the union may find it difficult to justify a strike. This is because the principal point made by the steel firms is that under the 1947 and 1948 contracts pensions were specifically ruled out as a bargainable issue this year.

Disagree on Type of Insurance

If the board agrees with the companies on pensions it will appear to the public and to the President as a closed case. It is doubtful if even Mr. Truman could do anything further.

The companies have never refused to bargain on social insurance but they want it to be contributory. The union feels the employer should pay the full cost. No matter what the board says on other disputed issues the possibility of collective bargaining on social insurance has not been ruled out. In the few days between the board recommendations and the end of the Truman Truce it is impossible for 58 steel companies to agree with their union locals on the exact details of a social insurance plan. But if they were merely to agree in principle, with details to be worked out later, there would be no strike on this point.

Main Points Are Listed

Here, briefly, are the arguments made by the companies and the union in hearings which began here July 28 and ended Aug. 29:

By the steel industry:

(1) Pensions are not bargainable under current contracts.

(2) There is no justification for increasing wages in a deflationary period.

Future wages can't come out of past profits.

"Sure I checked it carefully. It's about so wide."

(3) Social insurance is acceptable, but only on a contributory basis.

By the smaller steel companies:

(1) All of the above plus a request that the different production, profit and market problems of the smaller steel companies be given separate treatment in the board recommendations.

By the union:

(1) Pensions are needed and are a form of deferred wages. As such they are bargainable.

(2) The worker has a right to expect his standard of living to increase. The steel companies can afford it. The economy will benefit.

(3) Social insurance, like depreciation of machinery, is a legitimate production cost that should be paid for entirely by the company.

Vote for Union Representation

Pittsburgh—The American Federation of Labor is challenging the right of the United Steelworkers of America (CIO) to represent some 4000 production and maintenance employees at New Kensington, Pa., area plants of Aluminum Co. of America.

A National Labor Relations Board election will be conducted within the next 20 days to determine whether workers want to continue to be represented by the USWA, switch to the AFL or whether they prefer no union representation.

Pipe Concerns Present Exhibit

Birmingham—Four of Birmingham's largest pressure pipe companies will present a joint exhibit at the Alabama State Fair to be held here Oct. 3-8. The companies are American Cast Iron Pipe Co., National Cast Iron Pipe Div. of James B. Clow & Sons, McWane Cast Iron Pipe Co., and U. S. Pipe & Foundry Co.

INDUSTRIAL SHORTS

CRANES IN ACTION—A 16 mm sound film in full color, "Lorains in Industry," has been released by the THEW SHOVEL Co., Lorain, Ohio. The film is devoted exclusively to showing the use of Lorain machines for industrial material handling.

HELPING HAND—Paul F. Zerkle, sales manager, MICHIGAN TOOL CO., Detroit, has recently left for Europe. Mr. Zerkle will spend 2 months visiting industrial plants in England, France, Western Germany, Sweden, Holland and Italy to assist foreign industries with their gear production problems.

IN FULL SWING—New metallurgical, physical and chemical laboratories have been recently completed for EDWARD VALVES, INC., East Chicago, Ind., and are now in operation. They will be used for extensive research and development work on Edward and Nordstrom steel valves.

READY TO ROLL—WHITIN MACHINE WORKS, Whitinsville, Mass., has announced that the recently acquired Linwood mills of the former Whitin Bros. Inc., will be made available for production of textile machinery. Two of the present operating departments in the old cotton mill will be moved to Linwood.

BRANCHING OUT—LOGAN ENGINEERING CO., Chicago, has bought up the patent rights for the manufacture of automatic door checks. Logan, a maker of lathes, has found it necessary to diversify products due to the ups and downs of the machine tool business.

ROLLS AND JIGS—Blueweld, Inc., Milwaukee, has been named by the REED ENGINEERING CO., Carthage, Mo., as a representative in the Wisconsin and Minnesota area for their line of turning rolls and welding jigs for use with automatic welding.

ESTABLISHED—A new corporation AZED, INC. Chicago, jointly owned by Poor & Co., Chicago, and Acme Steel Co., Riverdale, Ill., has recently been formed to engage in the research, manufacture and sale of products and processes for all phases of the application and secondard treatment of zinc surfaces. F. A. Poor is president.

FIRST SHOWING—The dielectric sand core drier designed for streamlined foundry production and coordinated core room and molding floor operations will be on display at the National Metal Exposition on Oct. 17-21. It will be the first showing of this new equipment which was recently announced by the ALLIS-CHALMERS MFG. CO., Milwaukee.

CHANGEOVER—It has been announced that the valves and fiittings formerly manufactured at the Jarecki Mfg. Co. plant in Erie, Pa., will now be manufactured at the Tulsa plant of H. K. PORTER CO., INC.

EASTERN MARKET—WESTERN FOUNDRY CO of Chicago, manufacturers of gray iron, semi steel, carbon and electric furnace steel castings, has opened a New York office at 527 Fifth Ave.

GOING SOUTH—Negotiations under way for opening a branch plant in Bennettsville, S. C. about Jan. 1 have been announced by RUSSELL MFG. CO., Middletown, Conn. If plans materialize the plant will be operated by a subsidiary known as Russell Products Co. on a long-term lease with option to purchase.

CHAIN AGENT—Buford Bros. Inc., Nashville, Tenn., has been appointed by CHAIN BELT CO., Milwaukee, as a distributor of Rex steel and cast, conveyer and power transmission chains, Rex temperim sprockets and their many other items.

Three Norwegian Engineers Here to Study Our Methods

Washington — Two Norwegian study projects of American metal production methods are scheduled to get underway Sept. 4 with the arrival of three Norwegian engineers in the U. S.

The two technical assistance projects were requested by the Norwegian government to enable the engineers to gain knowledge that may be helpful in increasing productivity in Norway.

Under ECA sponsorship, two officials of Christiania Spigerverk, Oslo steel-producing firm, will visit various industrial plants in the U. S. and Canada to observe steelmaking practices under one project. The other project will enable Torgeir Hoverstad, works manager of Porsgrunn Elektrometallurgiske A/S, to study American electrolytic methods of producing manganese.

The Christiania Spigerverk officials are Werner C. F. Poensgen, technical director of the firm, and Einar Gornitzka, melt shop superintendent.

The costs of the two projects will be paid jointly by ECA and the Norwegian government.

Safety Clinic for Press Users

Chicago—A punch press safety clinic for users of power presses will be held Sept. 14 at the Graemere Hotel in Chicago. One exhibit will be all types of punch press safety devices. There will also be exhibits of the National Safety Council covering safety posters, films and programs. The Chicago chapter of the Pressed Metal Insitute is sponsoring the event.

Buffalo Bolt Declares Dividend

Buffalo—The Buffalo Bolt Co. has declared a quarterly dividend of 37½¢ a share on the common stock, payable Sept. 10 to holders of record Aug. 31. The company made similar payments in March and June of this year.

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Dr. Edgar C. Bain Receives Award from Franklin Institute

Pittsburgh—Dr. Edgar C. Bain, vice-president in charge of research and technology at Carnegie-Illinois Steel Co., has been awarded the John Price Wetherill Medal of Franklin Institute.

Dr. Edgar C. Bain

The medal was given in recognition of Dr. Bain's investigation into the structure of metallic alloys and his original work in application of the isothermal method of studying the rates of the transformations in steel which are responsible for its hardening.

Among other notable awards held by Dr. Bain are: The Robert W. Hunt Gold Medal of the American Institute of Mining Engineers, given for his work on stainless steel; the Henry Marion Howe Gold Medal from the American Society of Metals for work on hardening of steel; the Medal of the American Iron and Steel Institute for work on alloy steels; and the Benjamin Lamme Medal from Ohio State University for eminence in engineering.

At the National Metal Congress and Exposition Oct. 17 to 21 he will also receive the American Society of Metals' Gold Medal for versatility in the application of science to the metal industry.

Provides a Speakers Bureau

Peoria, Ill.—Caterpillar Tractor Co. has developed a specialized brand of public relations calculated to bear fruit to the man-on-the-street level. The community relations division of the company runs as a service to the community a speakers bureau.

The company will supply speakers, help get them and direct any one in the community to the proper man to speak on almost any conceivable topic. The company believes that this small branch of the community relations service provides a personal contact with his neighbors which constitutes one of the best ways of developing an understanding between laymen and industrial concerns.

Parts Plant Changes Hands

Cleveland — Cleveland Graphite Bronze Co. has acquired Monmouth Products Co., manufacturer of automotive parts, with two plants here. Purchase price will be determined on a basis of net book value of Monmouth's property, machinery, equipment and supplies.

Cleveland Graphite has had a substantial interest in Monmouth for several years. The company was sole distributor in the replacement market for Cleveland Graphite bearings and bushings.

Monmouth will continue under the direction of Raymond C. Oswald and Gilbert M. Salzman, former top executives.

Stainless and Electrical Sales Show a Slight Pickup

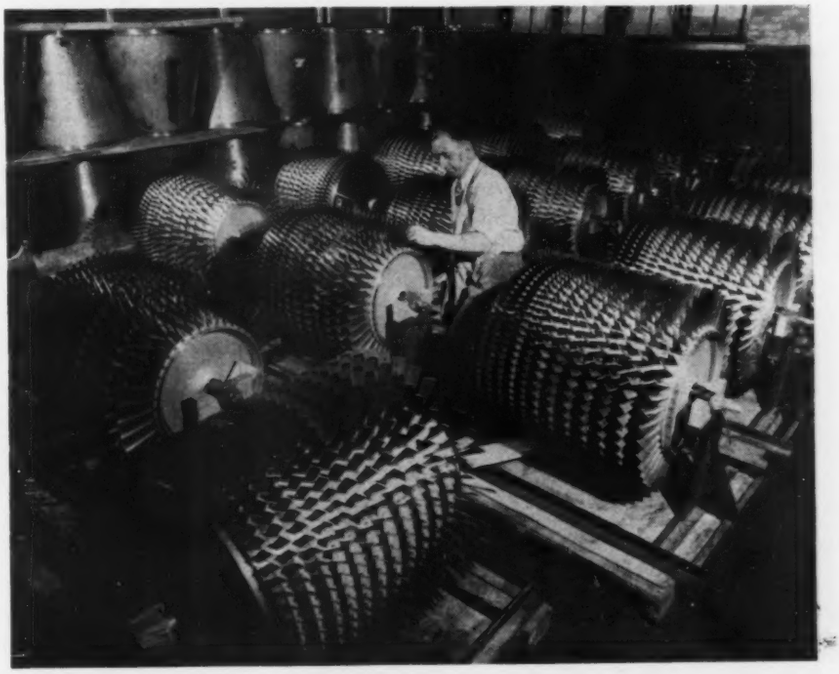
Pittsburgh—Stainless and electrical sheet producers are encouraged, but not exactly jubilant about the third quarter pickup in order volume for hese products.

While agreeing that business certainly has improved tremendously over the deep slump of 2 months ago, volume has not yet reached the point where any large number of employees are recalled.

The improvement has been steady, though gradual, however, and sales departments are inclined to view this as a healthy sign reflecting the probability that consumer inventories have been depleted to the point where they now are ordering on the basis of their own business volume.

Deliveries on stainless are running anywhere from 4 to 6 weeks, while electrical commitments are somewhat shorter—3 to 4 weeks. Oddly enough, despite the increase in orders, electrical sheet order books look worse than they did several months ago.

EXAMINATION: These are compressor rotors in General Electric's jet engine plant at Lynn, Mass. In operation, the whirling rotor sucks air into the engine at the rate of 90 lb per sec, compresses it, and forces it into combustion chambers. There the air combines with burning fuel and forms the thrust which propels jet aircraft. These rotors are awaiting assembly into complete J-47 engines.



Aluminum Producers Pay For Government Plants With Metal

Metal from Permanente and Reynolds will go into stockpile

New York—With the passage of the enabling act for the General Services Administration early in July, the way was cleared for payment in part of lease rental or purchase price for government-built plants with critical material for the stockpile.

Two aluminum producers have already taken steps to benefit from this authorization which permits them to make partial payment in pig or ingot aluminum. Until recently, the Munitions Board had been stockpiling only bauxite. Now it has declared pig and ingot aluminum as critical materials.

Permanente Metals Corp. has arranged for transferring 24 million lb of pig and ingot aluminum to the stockpile during the next year as part payment for three plants recently acquired from the government. These plants include the alumina plant at Baton Rouge, La., the Mead reduction plant and the Trentwood rolling mill, both of which are located at Tacoma, Wash. The purchase price of these three plants was $36 million. Original total valuation was estimated by the former War Assets Administration at $91 million.

Reynolds Is Negotiating

Reynolds Metals Co. is negotiating with the GSA for the transfer of 24 to 36 million lb of pig or ingot aluminum to the stockpile in part payment of rentals on its five government owned plants. The tonnage involved is said to be dependent on the aluminum market here and abroad and the tonnage of pig ad ingot aluminum acceptable to stockpile authorities.

The dollar valuation of these transfers of aluminum to the stockpile is relatively small, involving $3,840,000 at prevailing market prices for the Permanente transaction and about $5.7 million for the Reynolds transfer. This type of barter makes it possible to stockpile more metal than would otherwise be possible with existing funds.

Business Shares Army Awards

Washington—Approximately 42 pct of the Army's total procurement during the fiscal year 1949 was placed with small business firms. The Army's Logistics Div. reports that of the approximately $2 billion total spent in the continental United States, small business firms (those employing fewer than 500 persons) received about $846 million.

Jukebox Production Rises

Buffalo—Jukebox production of the Rudolph Wurlitzer Co. at North Tonawanda is the highest in 1½ years, according to Ray C. Haimbaugh, vice-president and general manager. Employment is up to 650 from a low of 500. The industry was one of the first to feel effects of the postwar leveling off.

COMPLETE STUDY COURSE: Six Navy officers and one Coast Guard officer have recently completed a 2-week course in engineering design at the General Electric Co. plant, Schenectady. Taught by specialists from GE's product divisions and by some of the nation's top-flight research engineers and scientists, the course concentrated on design, assembly, test and inspection of electrical equipment for marine and naval use.

Gradual Improvement Seen In the Pressed Metal Industry

Cleveland—Gradual improvement in the volume of metal stamping shipments was predicted here this week by major segments of the pressed metal industry.

A pick-up in the stamping business was evident in early August, in some segments of the industry, following a decline that began in October, 1948.

Reasons for the improvement are liquidation of inventories, which have been helped by the improvement in the home appliance business such as stoves, furnaces and other products; and seasonal factors.

The stamping business is still very spotty, and some companies that held up well during the general decline are now looking for orders. Automotive demand, which carried many, is expected to taper off during the last quarter.

Price Testing Noted

Price testing has been severe for several months, but the price situation is expected to stabilize as the marginal companies gradually fade out of the picture. There has been a price squeeze in automotive stampings, although stampings users are getting reconciled to the fact that the price is not coming down in the immediate future.

Some segments of the industry report that their customers are now preparing their fourth quarter stampings requirements, and that while nothing sensational is expected there will be a definite improvement. These orders are expected to reach the pressed metal industry during the latter part of September.

Syracuse Backs Steel Firms

Syracuse, N. Y.—More than 35 local firms, members of the Manufacturers Assn. of Syracuse, wired major steel producers last week urging them to insist on settlement of the wage and pension dispute at the company level as soon as possible.

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Tito's Economy Swings Toward the West

Several signs already noted . . . Metal shipments and World Bank loan may furnish credits for machinery.

Rome — Yugoslavia's economic pendulum is swinging farther and farther to the west. The political rhubarb between Tito and the Kremlin has been an important factor. So has the softening attitude of the U. S. toward the outlawed communist state.

But Tito needs more than a pat on the back. He needs a lot of money and machinery. Included in his 5-year plan are provisions for oil and steel developments each of which have been estimated to cost more than $100 million.

His declaration of independence from Russia has already proven costly. Loss of capital equipment from the Russian bloc has sorely tested an already strained economy. Now some help from the U. S. is on the way. But it probably will be too little and too late to salvage all of Tito's 5-year plan.

Results Are Listed

Here are some of the important economic results of Tito's improving relations with the west:

(1) The U. S. government has placed its stamp of approval on an order for a $3 million slabbing-blooming mill from Continental Foundry & Machine Co., Pittsburgh.

(2) A World Bank mission is now in Yugoslavia investigating that country's need for a loan. A loan has been applied for, but nothing has been said about the amount or specific projects.

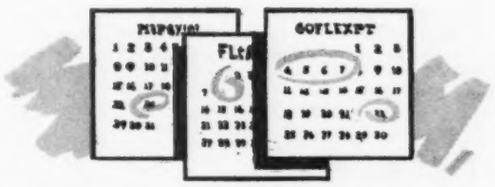
(3) Yugoslavia is shipping large tonnages of lead and copper to America. A boat which docked in New York last week was said to contain 6000 tons of lead and 1700 tons of copper. This single shipment contained 2½ times the amount of lead and about 85 pct of the amount of copper Yugoslavia shipped to the U. S. all of last year.

Would Buy In U. S.

Value of this shipment is about $1.8 million. Tito is believed to be willing to continue large shipments of these metals. His apparent efforts to build up credits in the U. S. are interpreted to mean that they will be used to purchase more machinery and raw materials there.

In view of Yugoslavia's economic position these moves are being taken none too soon. Some western observers have predicted that considerable outside aid will be required in the next 6 months to prevent economic collapse of that country.

Tito's steel industry has been suffering from stoppage of coke shipments from Poland and Czechoslovakia. Mining machinery is another item high on his list of needs. He is expected to seek this through a loan from the World Bank.



Dates to Remember

Sept. 12-16	**Instrument Society of America,** conference and exhibit, St. Louis.
Sept. 14-16	**Porcelain Enamel Institute,** annual forum, Columbus, Ohio.
Sept. 18-23	**American Chemical Society,** national meeting, Atlantic City, N. J.
Sept. 25-28	**American Mining Congress,** metal mining convention, Spokane.
Sept. 25-Oct. 1	**American Institute of Mining & Metallurgical Engineers,** midyear meeting, Columbus, Ohio.
Sept. 26-28	**National Electronics Conference,** Chicago.
Sept. 27-30	**American Society of Mechanical Engineers,** fall meeting, Erie, Pa.
Oct. 3- 4	**Steel Founders Society of America,** fall meeting, White Sulphur Springs, W. Va.
Oct. 3- 5	**American Coke & Coal Chemicals Institute,** annual meeting, Skytop, Pa.
Oct. 3- 6	**Assn. of Iron & Steel Engineers,** annual convention, Pittsburgh.
Oct. 4- 6	**Industrial Packaging & Materials Handling Exposition,** annual convention, Detroit.
Oct. 10-14	**American Society for Testing Materials,** West Coast meeting, San Francisco.
Oct. 12-15	**Electrochemical Society,** semiannual meeting, Chicago.
Oct. 13-15	**Foundry Equipment Manufacturers Assn.,** annual meeting. White Sulphur Springs, W. Va.
Oct. 17-21	**National Metal Congress,** Cleveland.
Oct. 24-26	**American Gear Manufacturers Assn.,** annual meeting, Chicago.
Oct. 27-28	**Gray Iron Founders Society,** annual meeting, Chicago.
Oct. 27-28	**Porcelain Enamel Institute,** annual meeting, French Lick, Ind.
Oct. 30-Nov. 2	**National Tool & Die Manufacturers Assn.,** annual meeting, New York.

IRRIGATION PURPOSES: This huge water pump casing in four parts at Farrel-Birmingham foundry, Ansonia, Conn., is made of high strength GM Meehanite metal and weighs 121,050 lb. The casing is for an 84-in. vertical volute pump, with a capacity of approximately 350,000 gal of water per min when pumping against a normal head of 197 ft at 180 rpm. The pump will be capable of furnishing about 2½ billion gal of water every 24 hr for the purpose of irrigation.

Defense Dept. Plans to Aid Employment in Distress Areas

Washington—The Defense Dept. said last week it will lend aid in relieving unemployment in localities designated by the White House as "distress areas."

As a start toward solving unemployment problems in two areas —New Bedford, Mass., and Muskegon, Mich.—the department will conduct "pilot studies" to determine if any items in the current procurement programs can be manufactured in those areas.

Additional relief by the Defense Dept. will be extended to other localities which may be cited by John R. Steelman, presidential assistant, as "distress areas," the department stated.

Fewer Strikes Reported in July

Washington — The number of strikes continued to drop in July, the Bureau of Labor Statistics reported last week. BLS said there were only 300 strikes in July, as compared with 375 in June and 394 in July 1948.

About 110,000 workers were involved in strikes in July, as compared with 575,000 in June. The 2,100,000 man-days of idleness in July was less than half the time lost in June, BLS stated.

Truscon Steel Co. Buys Plant

Canton, Ohio — Truscon Steel Co., a fabricating subsidiary of Republic Steel Corp. in Youngstown, has purchased the No. 2 plant of Diebold, Inc. here and will transfer operations of its screen division to the new plant.

OTS Expands Services

Washington — Basic technical information services of the Office of Technical Services, Dept. of Commerce will be slightly expanded during the coming 12-month period. The expansion, made possible by a slight increase in appropriations, will emphasize services to small business.

OTS hopes to strengthen its technical-inquiry program, and is particularly interested in cooperative arrangements with state, regional and local development agencies, as well as trade associations and similar groups.

Foundry Operations in New England Showing Improvement

Boston—New England foundry operations, which slumped in the latter part of the first quarter, have improved somewhat, although the betterment is not general. Management of those reporting a pickup in business since June cannot make up its mind whether the improvement is permanent or temporary.

Machine tool builders account for most of the foundry improvement. They have been buying parts castings, presumably because of the coal and steel labor situations. Textile and paper machinery makers have contributed, but on a limited scale.

Jobbing foundries generally are rather flat, but they have stocked considerable coke since June as a precautionary measure. Some have also bought more pig iron than current melts warrant, another precautionary move in the event of a steel strike.

The improvement in the foundry status is reflected to a minor degree in activity in scrap yards. Not a few of those yards closed many weeks are now operating with skeleton crews. They are moving small lots of cast to foundry yards, but not much scrap to steel making centers. Scrap that was dumped in piles when business was good is being sorted.

Alloy Steel Sales Normal In August But Trend Is Down Now

Cleveland—Alloy steel sales in August rose to their normal level for the first time since March, according to trade sources. While the recent bulge in alloy business was partially due to strike-hedging, producers feel certain that alloy operations will not drop in the near future to the July bottom, when they sagged to 40 pct of capacity. But some reduction is anticipated. There has already been some downtrend in the past few weeks. If there is no steel strike, the automobile industry, normally about 60 pct of the alloy market, will have about

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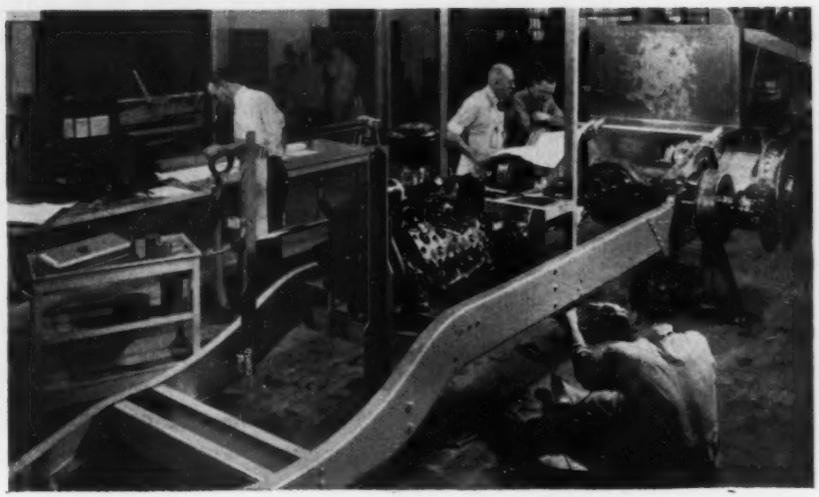
a 30-day inventory. This means that fourth quarter bookings will be reduced somewhat.

Delivery of all alloy products is prompt. It averages about 3 weeks, depending upon the processing involved.

Alloy steel has not yet found its normal postwar market relationship to carbon. In the past, alloy sales have averaged about 10 pct of carbon, but some producers feel that alloy's postwar relationship may be somewhat higher. When alloy-making operations dropped to 40 pct of capacity, carbon operations sagged only to 70 pct. Prices were firm throughout the decline, probably for the first time in a declining market in the history of the industry.



MARSH BUGGY: Shown here is the chassis of a marsh buggy, a huge-wheeled vehicle, developed for prospecting work in swampy and flooded regions. This buggy and other automotive equipment especially built for oil exploration, as well as other field research activities, is assembled, equipped and repaired in this assembly bay of the Gulf Research machine shop.

Advocates Loans for Taconite Research

Ore expert says cheaper ways must be found to process taconite ore . . . Initial cost is too high for industry . . . Long term RFC loans could finance needed research.

Washington — Legislation authorizing large, long-term government loans for developing deposits of low-content iron ores is being considered by a Senate committee this week.

While the success or failure of such legislation this year still is doubtful, members of Congress who reflect the views of the steel and mining industries are encouraged by the serious consideration given to such proposals, and are hopeful of enactment in 1950.

Security Is Involved

One such legislative proposal which would inject new life into current programs of ore research is a bill (S. 2344) sponsored by Senator Maybank, D., S. C., chairman of the Senate Banking Committee. His measure would eliminate the existing 10-year limitation on business loans granted by the Reconstruction Finance Corp. so as to encourage long-term exploration and development programs by private industry.

Some leaders in the field of iron ore research like Harrie S. Taylor feel that the Maybank bill should provide 40-year amortization on such loans, as well as specific instructions to RFC as to the purposes for which such loans might be granted.

Mr. Taylor, a long-range planner and top man for Oglebay, Norton & Co., of Cleveland, is of the definite opinion that U. S. security is directly dependent upon long-range assurance of an adequate supply of steelmaking materials.

Taconite Can't Compete

Such assurance in the case of iron ores is not clear-cut at present, he believes. But it could be so if the mining industry got a boost from the Federal Government in its efforts to find new and cheaper ways to process taconite and other low-content iron ores.

Actually, the steel industry has already spent about $25 million in taconite research, Mr. Taylor points out, but the surface has hardly been scratched. Hundreds of millions of dollars more are needed. Taconite and other low-content ores cannot compete successfully with the ores that have been moving out of the Mesabi for half a century.

Right now, there are about 1.7 billion tons of high-grade ore remaining in the Lake Superior district, Mr. Taylor says. At the present time, we're removing about 78 million tons a year. Our reserve in this area, he says, will last about 22 years. As for the Mesabi range, reserves there total only about 500 million to 700 million tons, he believes. This is all prime stuff. But the Mesabi alone holds literally billions of tons of taconite, not to mention other ore fields in the Great Lakes area.

Big Investment Needed

To beneficiate the low-grade iron-bearing material in the most economical manner would require huge annual production and a plant capable of producing 2.5 million tons of ore a year, Mr. Tay-

Turn to Page 110

Viewing the News from

The ECONOMIC SIDE

By JOSEPH STAGG LAWRENCE

Watch Washington

AT the time of writing, two members of the British Cabinet, Sir Stafford Cripps, Chancellor of the Exchequer, and Ernest Bevin, Foreign Secretary, are on the high seas headed for Washington. They are coming to discuss the latest crisis in the British purse.

This is a matter of considerable moment to all Americans, even though the terms of discussion are but dimly understood and the subject matter seems abstract and remote. We have given Britain more than six billion dollars since the end of the war. The total of our investment in world recovery during the last four years exceeds twenty billions. Although the national income now runs at the rate of $212 billion and the Federal Government will collect about a fifth of this in taxes, it is still unable to pay its own bills. The difference, amounting to five billions, is just about the amount we are currently laying out for foreign aid. The plight of the English, therefore, involves also the solvency of America.

Furthermore, according to advance but unofficial reports, these emissaries of the mother country are coming with some strange proposals. Bevin, it is understood, would like "to integrate" the currencies of the dollar and sterling areas, i.e., have a common currency for Canada, the United States, Great Britain, Australia, South Africa. To establish such a currency on a sound basis, under which the holder of paper money, anywhere in this "integrated" area, might exchange it for a stipulated quantity of gold, is inconceivable.

It is inconceivable because such a provision would involve the forfeit of a cardinal sovereign right, the right to manipulate the currency for the advantage of the state. It would mean that each nation would have to enter the money market and appeal for the confidence of investors on the same basis as any private applicant for credit. This would upset the designs of the planners on both sides of the Atlantic. Any other arrangement, without convertibility into gold at the option of the currency holder, is likely to be a more or less subtle snare under which our relatives and friends and former allies would tap our resources for amounts over and above those scheduled under the Marshall Plan.

It has been generally assumed that the English pound, as a result of the current crisis, would be devalued. This is resisted by Sir Stafford who claims that it will simply raise the cost of English imports, including vitally needed food and raw materials, and cut the English standard of living.

He advances a novel proposal. The principal trading area of the world, he says, is the sterling area. It is more important than the dollar area. If there is a disparity between the pound and the dollar, then it is the latter that should be adjusted and not the former. How should this be done? Simply by raising the price of gold and reducing the nominal gold content of each dollar.

It may be well for the American Treasury to lock its vaults, keep its eyes and ears open, and take careful counsel before making any commitments. Our record in the postwar world hardly justifies the Yankee's reputation for shrewdness. In spite of frayed tempers and harsh name-calling, the problem of the British calls for sympathy rather than condemnation. Yet permanent support of the English economy is hardly feasible. At some point the British will have to find and apply their own solution.

Taconite Ore

Continued from Page 109

lor states. This would be a minimum for economical operation. Initial investment would be costly. Auxiliary facilities—such as railroads, power plants, water supply, and disposal of tailings—alone would require a large investment.

High quality iron ore can be produced today with a capital expenditure of from $3 to $5 per ton. But the cost of producing one ton of beneficiated ore today would run around $20. Obviously, taconite cannot complete in today's market. The problem, he believes is to find out how to get the cost down—through research—so that the cost won't remain out of sight in time of war or emergency.

Who's going to pay for this research? Mr. Taylor says the mining industry can't afford the staggering sum needed for a thoroughgoing research program. At least part of the answer lies in getting help from Uncle Sam, he believes.

Advocates New Plant

Looking ahead only 9 years, Mr. Taylor estimates that by 1958, the U. S. should be producing 5 million tons of ores from taconite as replacement for direct-shipping ores. "Using $15 million as the average capital cost for each annual ton of output," he predicts, "this means that $75 million would have to be spent in the next 5 or 6 years." By 1965, he says, this figure should rise to $420 million, and by 1976, to $1 billion.

He advocates immediate construction of 3 plants—at a cost of $50 million apiece—so that industry can tackle the problem without delay on a broad scale.

These 3 plants would have an annual output of 2.5 million tons. To do it on a smaller scale wouldn't be practical, he argues. Each plant would be operated by a separate firm. Each firm should be able to supply 10 pct of the $50 million required for plant outlay. The balance, under Taylor's plan, would be obtained from RFC through long-term, low-interest loans.

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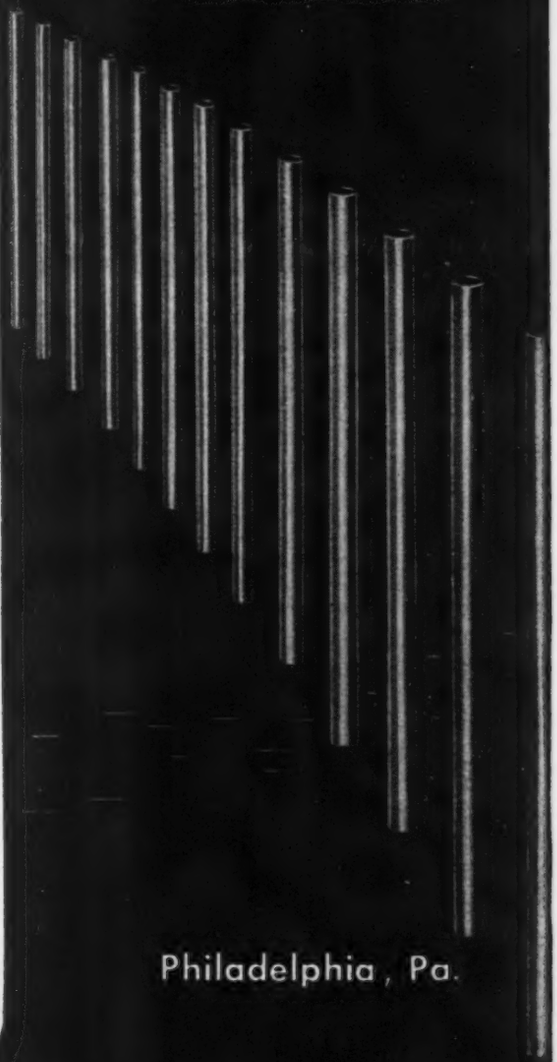
44,000,000

PHOENIX ARIZ.

TUBES



. . . IDENTICAL TO 0.001"

Modern mass production methods of the BB Pen Company of Hollywood, California, require ink cartridges held within strict dimensional tolerances: plus 0.0015" minus 0.0000" O.D.; plus 0.001" minus 0.000" I.D. Precision Tube Company has already supplied 44,261,000 brass tubes for these cartridges which, if laid end to end, would stretch from Philadelphia, Penna., to Phoenix, Ariz., and every one identical within the specified tolerances.

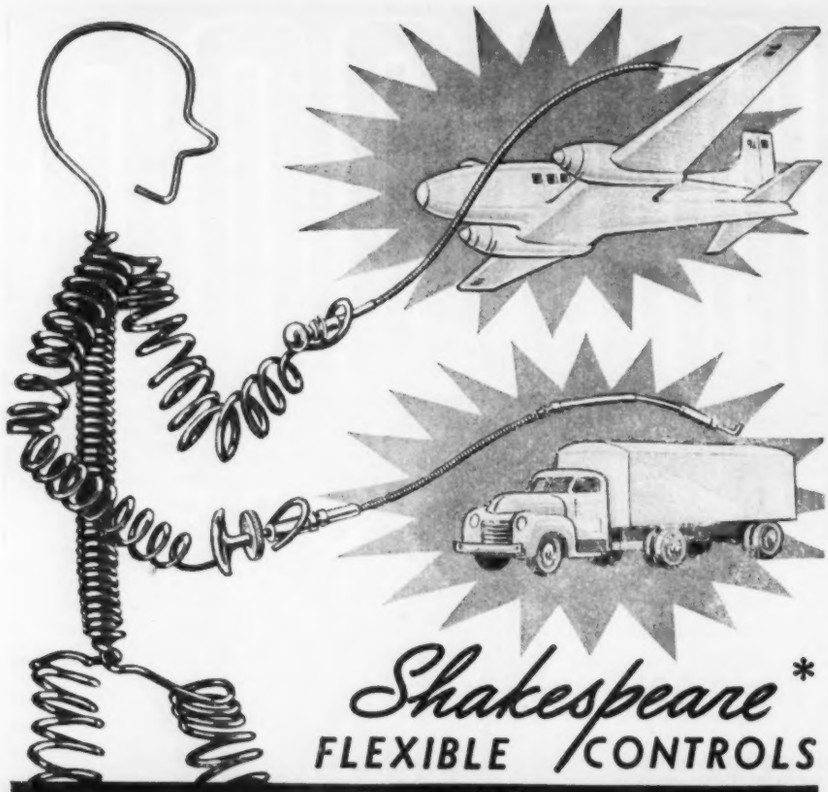
This Parade of Precision is possible only through highly specialized quality control—the same control used for the sizes, shapes, alloys, and finishes you specify. Contact Precision when you need non-ferrous tubing from 0.500" O.D. to 0.010" O.D. . . . wall thicknesses down to 0.0015".

When Precision Counts . . .
Count On Precision

Philadelphia, Pa.

PRECISION TUBE CO.

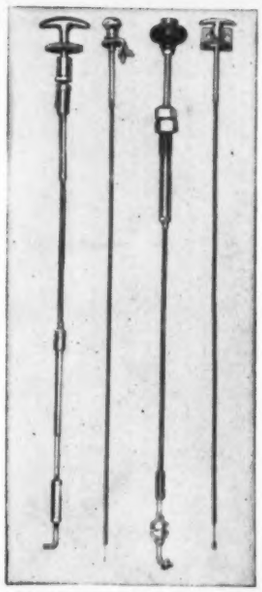
3824-26 TERRACE STREET PHILADELPHIA 28, PA.



Shakespeare* FLEXIBLE CONTROLS

made with

KEYSTONE WIRE



Shakespeare flexible control cables for trucks and aircraft give sure dependability . . . sturdy efficiency through smooth, positive operation.

Because these control cables are "lifelines" between operator and motor, the types of wire used in their construction must meet rigid specification . . . conform to extremely close tolerances. Several types of Keystone wire are used . . . galvanized basic; drawn-after-galvanizing MB; brite MB and coppered MB. Each type of Keystone wire delivers in full the exact uniformity of strength, gauge and analysis required.

Regardless of the performance demanded in your wire products, consult Keystone for the materials to meet your most exacting specifications.

*Shakespeare Products Company
241 E. Kalamazoo Avenue
Kalamazoo 2, Michigan

KEYSTONE
MUSIC SPRING WIRE

SPECIAL ANALYSIS WIRE
for all industrial purposes

KEYSTONE STEEL & WIRE COMPANY
PEORIA 7, ILLINOIS

Iron Age Introduces

Continued from Page 28

started with the company in 1915 and has been with it ever since. L. F. **McGlincy** is district manager of operations for American Steel & Wire Co. in Pittsburgh.

S. B. APPLEBAUM, manager, cold water process treating division, Cochrane Corp.

S. B. Applebaum has been appointed manager of the cold process water treating division of COCHRANE CORP., Philadelphia. He is also vice-president of the Liquid Conditioning Corp., an operating subsidiary of Cochrane.

Martin J. Verhuel has become chief product engineer, Meat Saw Division of WELLS MANUFACTURING CORP., Three Rivers, Mich. **Erwin Tobler** is chief product engineer, Metal Saw Division. **David T. Evans** is research engineer for both divisions.

Ralph Doherty is named division manager of the areas comprising the West North Central States, WILKENING MANUFACTURING CO., Philadelphia. He will headquarter in Kansas City.

R. S. Kersh has been promoted manager of central station sales at WESTINGHOUSE ELECTRIC CORP., Pittsburgh. **F. D. Weather-**

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PRINCESS WENATCHEE:
Why do Keokuk electro-silvery pigs come in 3 sizes?
CHIEF KEOKUK
Competent metallurgists are available through our Sales Organization to help you with any of your problems, without any obligation on your part.

CHIEF KEOKUK:

"for convenience and efficiency"

FOR STEEL PLANTS

60-pound Keokuk Electro-Silvery Pigs for blocking the open hearth heat. For equal distribution of silicon and best temperature melt-down. Handled by magnet.

FOR FOUNDRIES

30-pound Keokuk Electro-Silvery Pigs for charging mechanically or by hand into the cupola. Easily broken into two or more pieces, handled by magnet and measured by weight. Regular or alloy analysis.

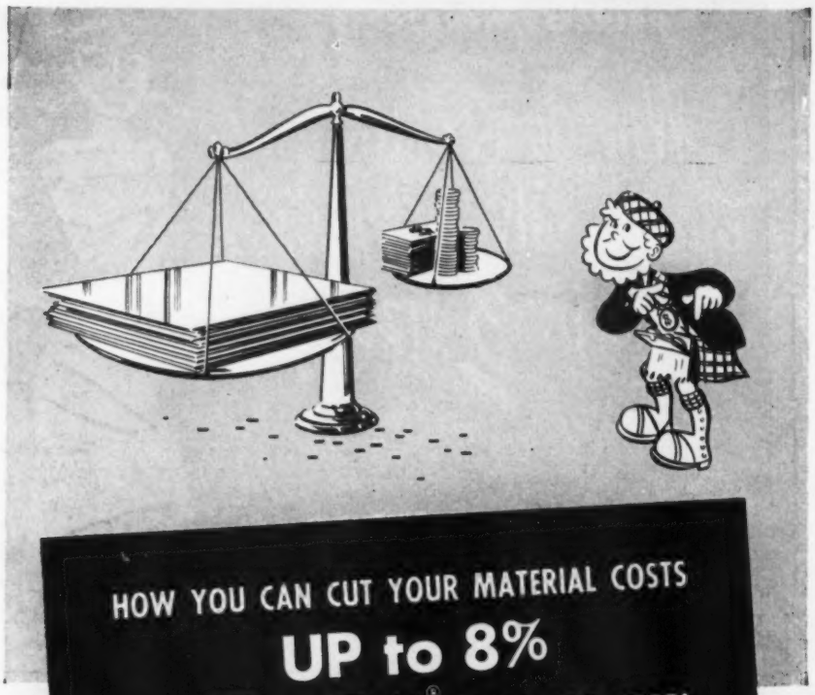
FOR FOUNDRIES

12½-pound Keokuk Electro-Silvery Piglets so uniform in weight that they may be charged into the cupola by count, eliminating weighing operations. Handled by magnet. Regular or alloy analysis.

KEOKUK
electro-silvery

BY KEOKUK ELECTRO-METALS COMPANY
KEOKUK, IOWA
WENATCHEE DIVISION, WENATCHEE, WASHINGTON

SALES AGENTS: MILLER AND COMPANY, 332 S. Michigan Ave., Chicago 4, Illinois
Cincinnati 2, Ohio, 3504 Carew Tower • St. Louis 1, Mo., 407 N. Eighth St.



HOW YOU CAN CUT YOUR MATERIAL COSTS

UP to 8%

WITH *MicroRold*® STAINLESS STEEL

In the past it has been customary to order stainless steel sheets by gauge number. The permissible A.I.S.I. variation in thickness is approximately plus or minus 10%. Why accept .052 gauge when .047 gauge would suffice?

Using a standard 18 gauge 36 x 120" sheet as an example, the theoretical weight is 63 pounds, but this weight could permissibly vary between 65.52 pounds and 59.22 pounds.

Now you can order MicroRold stainless steel sheets to a decimal thickness plus or minus 3%.

A sheet of MicroRold .0475 thick would weigh 59.85 pounds thus insuring a saving of 3.15 pounds (5%) from the theoretical weight, or 5.67 pounds (8%) from the maximum, while still remaining within the 18 gauge range.

Weight of One Sheet of 18 Gauge 36 x 120 Plus or Minus 10%	.052"—65.52 Pounds .051"—64.26 Pounds .050"—63.00 Pounds .049"—61.74 Pounds .048"—60.48 Pounds .047"—59.22 Pounds	Theoretical Wt. 63.00 Pounds
Weight of One Sheet of MicroRold .0475 36 x 120 Plus or Minus 3%	.0475"—59.85 Pounds Theoretical Weight 59.85 Pounds	

Average saving in theoretical weight 3.15 Pounds per sheet—or 5%.

Remember, this saving is expressed in pounds per single sheet. Multiply your saving by the number of sheets you use per month and the price per pound. You'll have a strong dollars and cents reason for specifying MicroRold stainless steel every time.

WASHINGTON STEEL CORPORATION

WASHINGTON, PENNSYLVANIA

IRON AGE INTRODUCES

Continued

holt is manager of industrial sales. Both will be located at the East Pittsburgh plant.

James E. Woodall has been named manager of the Fairmont, West Va. plant of the Westinghouse lamp division.

John Rosevear, former manager at Fairmont, becomes staff assistant to Mr. Woodall.

RANDALL R. BURDEN, sales director, Artisan Metal Works Co.

Randall R. Burden is sales director of the new truck body division of ARTISAN METAL WORKS CO. Cleveland.

W. C. Snyder, Jr., vice-president in the engineering and construction division of KOPPERS CO. INC., Pittsburgh, has been assigned to manage the metallurgical department of the division.

Peter V. Martin will be assistant manager.

C. A. Kral has been appointed as a special assistant who will go to Chile as Koppers Chilean management representative.

R. E. Burroughs has been appointed manager of engineering of GENERAL ELECTRIC's Aircraft Gas Tur-

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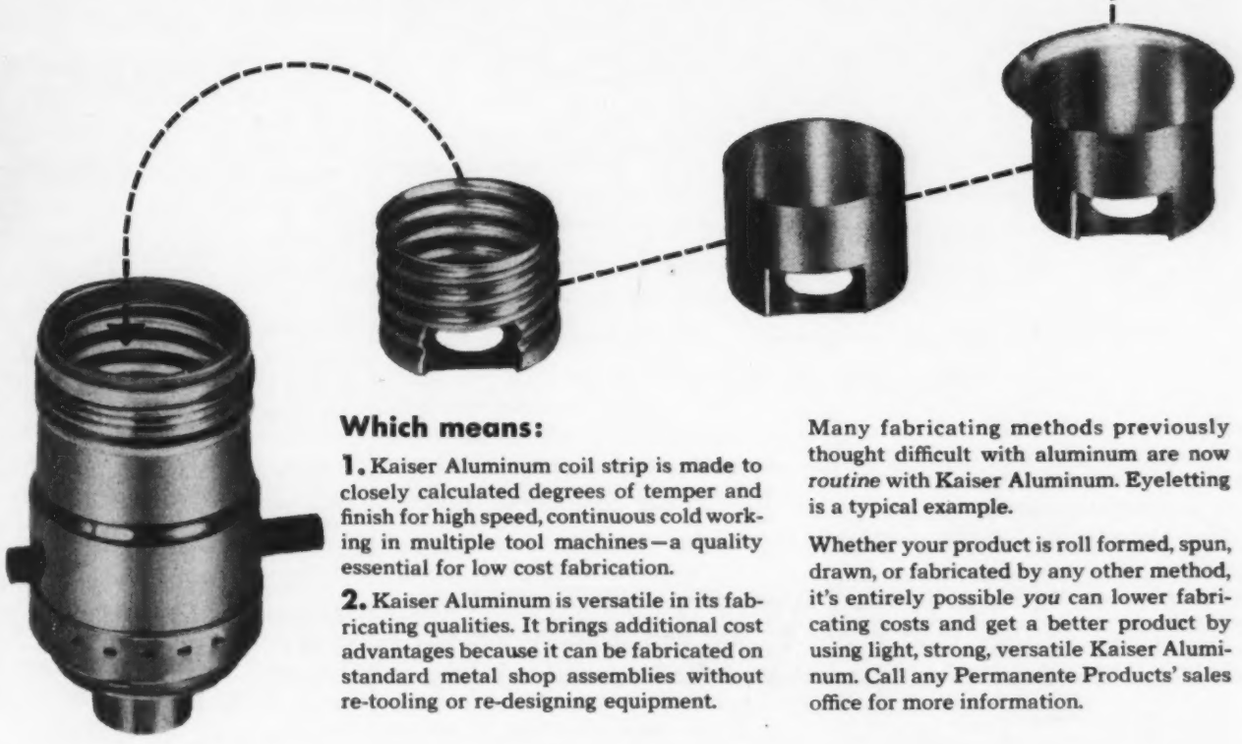
WATERBURY BRASS GOODS BRANCH of the American Brass Company turns out aluminum screw shells for socket assemblies—approximately 2500 of them an hour. They use an eyelet machine—an automatic multiple plunger power press—to transform a section of Kaiser Aluminum coil strip into a blank—then into a screw shell—in 1½ seconds! Here are the seven steps from blank to shell.

In this eyeletting operation...

Kaiser Aluminum forms readily—rapidly



Which means:

1. Kaiser Aluminum coil strip is made to closely calculated degrees of temper and finish for high speed, continuous cold working in multiple tool machines—a quality essential for low cost fabrication.

2. Kaiser Aluminum is versatile in its fabricating qualities. It brings additional cost advantages because it can be fabricated on standard metal shop assemblies without re-tooling or re-designing equipment.

Many fabricating methods previously thought difficult with aluminum are now *routine* with Kaiser Aluminum. Eyeletting is a typical example.

Whether your product is roll formed, spun, drawn, or fabricated by any other method, it's entirely possible *you* can lower fabricating costs and get a better product by using light, strong, versatile Kaiser Aluminum. Call any Permanente Products' sales office for more information.

Permanente Metals

PRODUCER OF

Kaiser Aluminum

SOLD BY PERMANENTE PRODUCTS COMPANY, KAISER BLDG., OAKLAND 12, CALIFORNIA . . . WITH OFFICES IN:
Atlanta • Boston • Chicago • Cincinnati • Cleveland • Dallas • Denver • Detroit • Houston • Indianapolis • Kansas City • Los Angeles
Milwaukee • Minneapolis • New York • Oakland • Philadelphia • Portland, Ore. • Seattle • Spokane • St. Louis • Wichita
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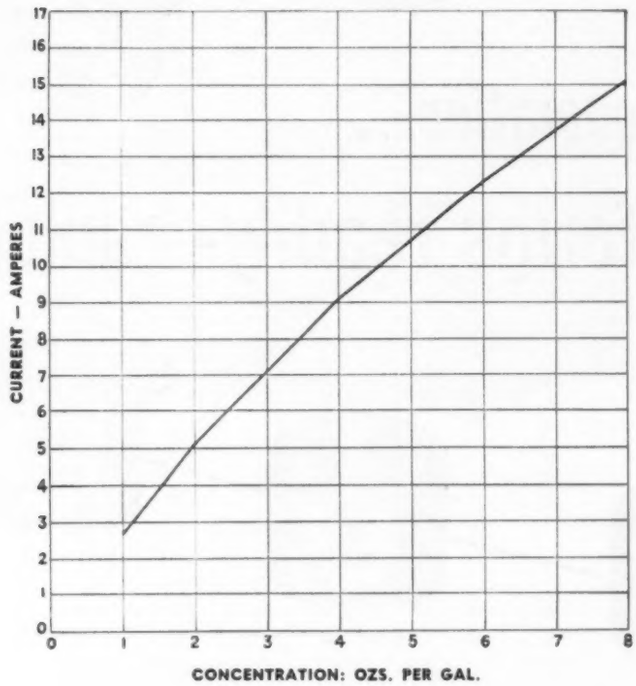
For faster cleaning of ferrous parts— WYANDOTTE F.S.

Current-conducting Characteristics of Wyandotte F.S.
(Steel Electrodes, 6 Volts, 180° F.)



Wyandotte F.S. is a heavy-duty reverse-current electrocleaner, especially designed to remove fabricating compounds and "smut" from ferrous parts prior to plating.

Because F.S. is a *balanced* formulation, it assures (1) high conductivity—see chart above, (2) fast and complete wetting and cleaning action, (3) controlled foaming and (4) long life in solution.

Your Wyandotte Representative will be glad to demonstrate the advantages of Wyandotte F.S. or any other Wyandotte Metal Cleaner at your convenience. He's always at your service.

Wyandotte
REG. U. S. PAT. OFF.

WYANDOTTE CHEMICALS CORPORATION
WYANDOTTE, MICHIGAN • SERVICE REPRESENTATIVES IN 88 CITIES

IRON AGE INTRODUCES

Continued

bine Division at Schenectady, N. Y. **H. D. Kelsey**, formerly manager of engineering there, has been appointed administrative assistant to the manager of the turbine divisions.

Dr. Morris A. Steinberg has been elected to the Board of Directors of HORIZONS INC., Princeton, N. J. and Cleveland. Dr. Steinberg joined the metallurgy division at Cleveland in 1948 and was later appointed head of that division.

OBITUARY

Theodore E. Moritz, 77, retired former purchasing agent of AMERICAN STEEL FOUNDRIES, Chicago, died Aug. 9.

Roy E. Hammond, 53, comptroller of GENERAL MOTORS CORP., Detroit, died Aug. 17.

Arthur Krueger, 59, district manager at Dodge Bros. Corp., a division of CHRYSLER CORP., Detroit, died Aug. 18.

Joseph W. Spradley, 48, sales manager and secretary of M & H VALVE & FITTINGS CO., Anniston, Ala., died Aug. 21.

Willard L. Moyer, 57, chief industrial engineer of NATIONAL TUBE CO., Pittsburgh, died Aug. 22.

William E. Farrell, 79, founder and chairman of EASTON CAR & CONSTRUCTION CO., Easton, Pa., died Aug. 23.

Aaron Rosen, 52, vice-president of BUFFALO SASHWEIGHT & FOUNDRY CO., died Aug. 26.

Earl M. Hayes, 60, general sales-manager of the steel division, STANLEY WORKS, Bridgeport, Conn. for the past 27 years, died Aug. 29.

James D. McKnight, 42, president of ALLOY STEELS INC., Detroit, died recently.

Resume Your Reading on Page 29

FREE

PUBLICATIONS

Continued from Page 36

sories. *Standard Die Set Manufacturers, Inc. For more information, check No.* 11 *on the postcard on p.* 37.

Air Outlets

Described in catalog No. 50 are high velocity air and gas outlets of various types. Engineering data is also included. *Stewart Mfg. Co. For more information, check No.* 12 *on the postcard on p.* 37.

Cutting Machine

Shearing machine with unobstructed cutting vision, which shears cleanly, fast, safely is described in 4-p. folder. Machine cuts and trims irregular shapes and can be used for beading, forming and flanging. *Industrial Devices Corp. For more information, check No.* 13 *on the postcard on p.* 37.

Buying Steels

How to specify and buy alloy steel with confidence is subject and title of 24-p. booklet. Booklet covers control points of buying and using alloy steels as well as other pertinent data. *Joseph T. Ryerson & Son, Inc. For more information, check No.* 14 *on the card on p.* 37.

Stud Driver

Bulletin describes and illustrates uses of explosive operated stud driver. Listed are various types and sizes of driver and accessories available. *Powder-Power Tool Corp. For more information check No.* 15 *on the postcard on p.* 37.

Laboratory Instruments

Thermometers, psychrometers, barometers, temperature regulators and hydrometers are described in catalog No. 15. Included is section on engineering data. *H-B Instrument Co. For more information, check No.* 16 *on the card on p.* 37.

Steel Fabrication

Steel fabrication service and facilities available to industry are described in booklet. Also shown are buildings and various types of machinery and equipment that have been fabricated. *Watkins, Inc. For more information, check No.* 17 *on the postcard on p.* 37.

Welding Equipment

Catalog D describes welding and cutting equipment. Book is divided into sections covering the various gases, gas welding equipment, arc welding equipment and protective equipment. *Burdett Oxygen Co. For more information, check No.* 18 *on the postcard on p.* 37.

Contract Stamping

Twenty-fifth anniversary bulletin describes products of various divisions which include air and gas blower wheels, drawn steel wheel guards and contract stampings. *Morrison Products, Inc. For more information, check No.* 19 *on the postcard on p.* 37.

Silicates

Described in 20-p. pocket size manual are silicate of soda products available in 10 grades. Also listed are physical properties, industrial applications, advantages and size and weight of packages. *Diamond Alkali Co. For more information, check No.* 20 *on postcard on p.* 37.

Tools

Catalog H describes collets and chucks, adjustable floating holders, tap chucks, air chucks and expanding mandrels. Contains section on principles of operation and application of various tools. *Erickson Tools Div., Erickson Steel Co. For more information, check No.* 21 *on the postcard on p.* 37.

Vibration Mountings

Photographs and charts are used in analysis of vibration absorption of production machinery through the use of felt mountings, in a 20-p. booklet. *Western Felt Works. For more information, check No.* 22 *on the postcard on p.* 37.

Resume Your Reading on Page 37

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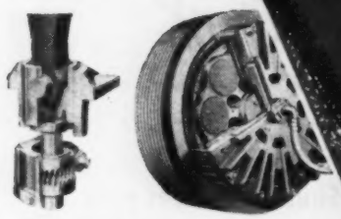
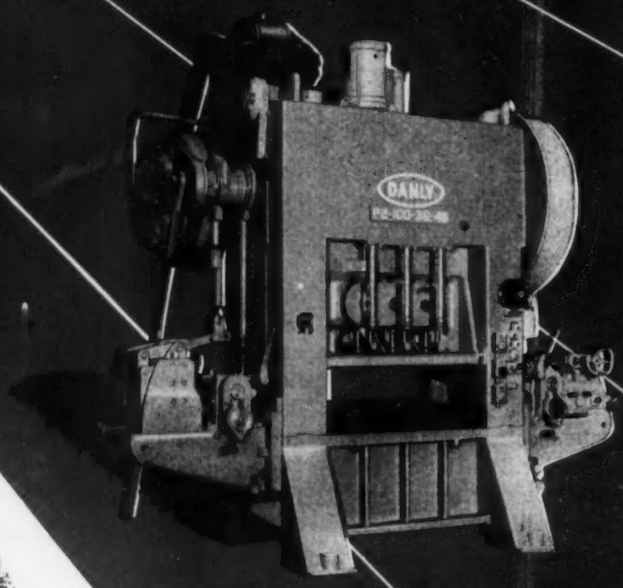
DANLY PRESSES

1. new design features
2. extra rugged construction
3. record-breaking performance



LEFT—Cut-away view of special Danly pitman wrist pin design showing guide construction. RIGHT—Cut-away view of Danly Clutch showing long wearing, easily replaced friction discs.



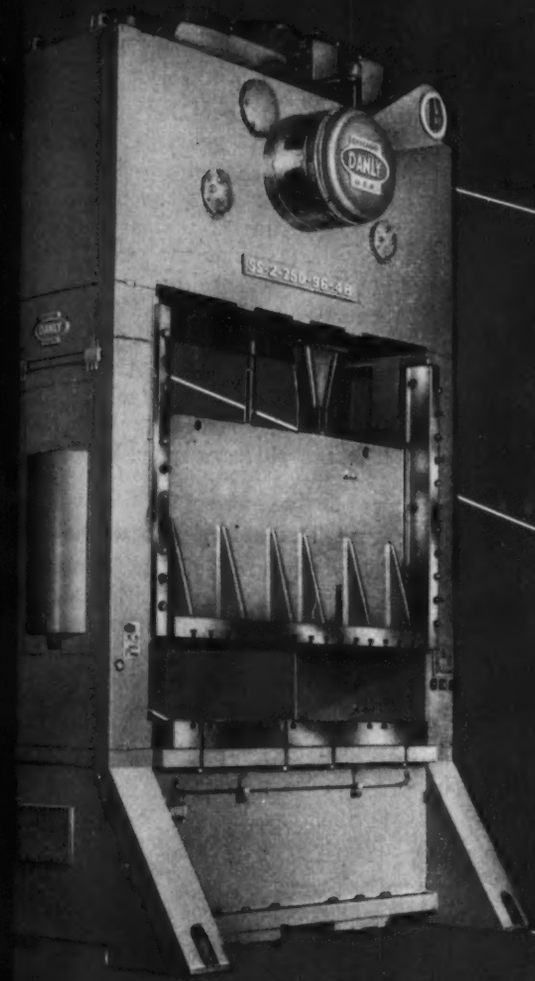
1. New Design Features . . . Press engineering achievements like the Danly "low inertia" clutch, positive automatic lubrication, special pitman wrist pin design and sensitive electrical controls assure ease, economy and continuity of operation.

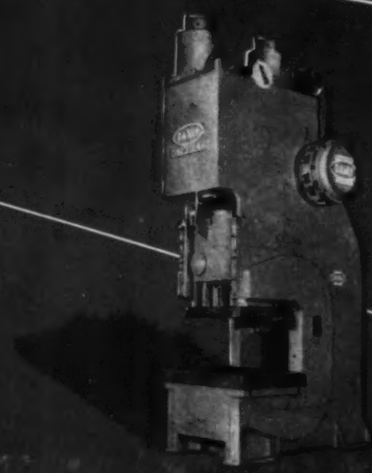
2. Extra Rugged Construction . . . Special structural features like the extra heavy stress relieved frame weldments, oversized tie-rods and bronze lined, fully adjustable gibs make every Danly Press more rugged . . . to withstand the continual abuse of 24 hour, 7 day week operation.

3. Record-breaking Performance . . . The exclusive Danly "low inertia" clutch alone minimizes the most troublesome source of press maintenance cost and work stoppage because it out-wears conventional type press clutches 10 to 1! A greater proportion of the clutch assembly mass revolves continuously with the flywheel to reduce the clutch "pick-up" load. Thus, less heat is generated. Forced air circulation contributes further to cool operation.

"IT COSTS LESS TO RUN A DANLY PRESS"

E... better 3 ways!





GAP FRAME . . . This 200 ton Danly Gap Frame press shows how modern eccentric gear construction permits a ... closely coupled drive. As a result, drive members ... and wear longer. Other types include inclinable presses, underdrive presses, and special weld'ag presses. Whatever your mechanical press requirements, you can have the advantages of the ... Danly construction and engineering features.

Check these advantages and see how DANLY PRESSES can cut your production costs.

- ✔ **greater rigidity . . . the entire frame is constructed to minimize deflection and vibration at rated capacity.**
- ✔ **less downtime . . . positive lubrication, longer clutch life and increased accessibility of brake and clutch components subject to wear are only a few of the features that make Danly Press maintenance less frequent and less costly!**
- ✔ **precision construction . . . balanced rotating parts and precision machined guides reduce wear and assure accurate die closure.**
- ✔ **extra sensitive controls . . . special five position clutch controls with built-in safety features facilitate die tryouts and protect the press mechanism.**

STRAIGHT SIDE . . . This new single action press was ... in a leading automotive manufacturing ... reduce stamping costs. Presses are available ... or four point suspension ... or triple action. All of the special Danly ... engineering to meet your press requirements ... that a Danly Press will do your job ...

We will be glad to arrange a ... of the savings DANLY PRESSES ... achieve in your specific application. Write today!

DANLY

MACHINE SPECIALTIES, INC. ... SOUTH KEDZIE AVENUE, CHICAGO 29, ILLINOIS

Did you know that SHIMS can be MADE ADJUSTABLE?

...to cut machining costs
...to save assembly time

Laminated shims, stamped from sheets of *LAMINUM**, are **adjustable.** Laminations of .002 or .003 inch brass or steel simply p-e-e-l off with a penknife, right at the job!

HERE ARE THE ADVANTAGES:

1. No more filing or precision machining or grinding. Laminated shims can take care of increased component tolerances.
2. No fumbling or counting loose shims. The pack is *bonded* together although it peels easily.
3. No dirt, oil, grease between shim layers. Shim is always uniform in gauge, clean and smooth as glass.
4. Actually *less* compressible than stacked or one-piece shims.
5. No standby lathe or operator—no new skill required.
6. Can be fitted with babbitted lugs to prevent oil or pressure loss.

FOR PRECISION ADJUSTMENT OF SPLIT BEARINGS, GEAR MESH, END-PLAY—ACCURATE SPACING OF MACHINERY COMPONENTS.

Send today for our new data file with specifications, design factors and applications. Sample of *LAMINUM* included.

USE OUR CATALOG FILE—SHIM SHEETS

STAMPING • GRINDING METALWORKING SERVICES

Press capacity to 100 tons, 24 inches square, shallow draw. Special equipment and variety of dies can eliminate die-making for short runs. Wide stock of materials. Let us quote on your *difficult* jobs.

* *LAMINUM* (Reg. U. S. Pat. Off.) shims are solidly bonded units made up of .002 or .003 inch brass or steel laminations with a microscopic layer of metallic binder. Cut to your exact specifications.

LAMINUM

THE SOLID SHIM THAT peels FOR ADJUSTMENT

LAMINATED SHIM COMPANY, Inc.

3209 Union Street Glenbrook, Conn.

SHIMS SHIM STOCK STAMPINGS AN-COR-LOX NUTS

NEW

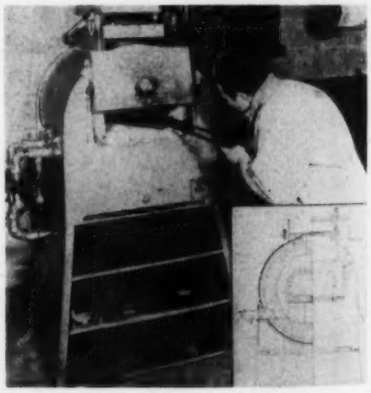
PRODUCTION IDEAS

Continued from Page 40

diam, 10.5 diametral pitch and a 5/8 in. face. The blank is 5.809 in. long overall and has a 0.875 in. diam broached hole running through its length. Floor to floor time for this operation is 16 sec, or a rate of 191 gears per hr at 85 pct efficiency. The three smaller gears of the cluster can be shaved on the machine at comparable production rates using the same loader and merely changing the setup. Automatic loaders vary in design depending on type of gear and overall dimensions of the blank. *National Broach & Machine Co. For more information, check No. 34 on the postcard on p. 37.*

Heat Treating Furnace

New features of the Sunbeam Stewart wide range oven include an inverted muffle section that quickly



converts the furnace from semi to full muffle for atmosphere hardening, and a removable rear plug that permits center heating of long bars. The unit operates over a 300° to 2400°F range. New design of the combustion chamber, its location, and 95 pct turn down ratio of the nozzle-mixing burners provide a turbulence to the combustion gases to make this temperature range possible. The furnace is adaptable to two-valve manual control or automatic temperature control employ-

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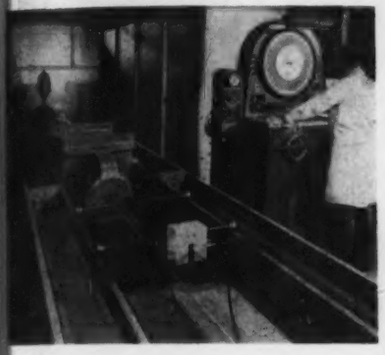
ng an air/gas proportioning valve. *unbeam Stewart Industrial Fur-ace Div. For more information, heck No.* 35 *on the postcard on* . 37.

Cable Testing Machine

Tensile test of multi-strand wire able specimens up to 55 ft long be-ween grips are made by one man n a horizontal testing machine 74 t long. This machine, designed for



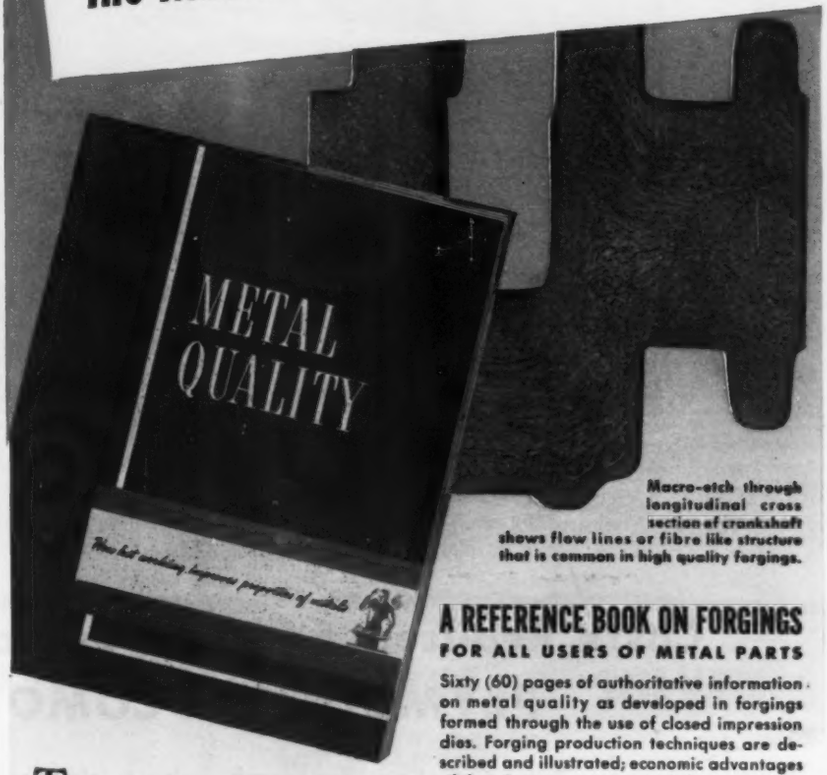
loads up to 120,000 lb, records stress-strain curves automatically for power line conductors with two metal strands, showing the relation between elongation and load and the behavior of composite power line conductors under loads. An extensometer in combination with Microformer-type recorder equipment autographically produces stress-strain curves for a central section of the specimen. The machine has four ranges: 120,000, 24,000, 6000, and 1200 lb. Ten-inch chart records can be obtained for maximum loads as low as 600 lb. Loads are applied by a hydraulic cylinder having a maximum stroke of 60 in. Loading speeds may be controlled between 0 and 6 ipm. *Baldwin Locomotive Works. For more information, check No.* 36 *on the postcard on p.* 37.

Spooling Unit

Tension control and constant lineal speed are provided on a new spooling unit that can be adapted to applications requiring take-up or winding equipment, such as web processing, strip stock takeups, payoffs and rewinders. Typical installations would be in continuous annealing, electroplating, galvanizing, cleaning and tinning lines. The machine illustrated, operates direct-

Turn to Page 124

Whatever you COMPARE with a Forging ACTUALLY EMPHASIZES the METAL QUALITY OF FORGINGS



Macro-etch through longitudinal cross section of crankshaft shows flow lines or fibre like structure that is common in high quality forgings.

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FOR ALL USERS OF METAL PARTS

Sixty (60) pages of authoritative information on metal quality as developed in forgings formed through the use of closed impression dies. Forging production techniques are described and illustrated; economic advantages of forgings are presented from the viewpoint of top management, design engineers, metallurgists and production executives. Your copy is ready. Fill in and attach coupon below to your business letterhead.

The uniformity of metal quality found in forgings cannot be duplicated! Now is an excellent time to check your product for cost reductions right down the line—explore every possibility to improve performance and appearance, while reducing dead weight of component parts. Double check all parts—particularly those which are subject to the greatest stress and strain. Check machining and finishing time schedules—forgings have been known to speed up production by as much as 250 per cent. Rejects at the point of assembly are costly, a needless waste—forgings offer almost a 100 per cent yield of sound parts because forgings are unusually free of concealed defects. Check to see if some parts may not be combined into integral forgings—an obvious saving in finishing operations. Consult a forging engineer when checking parts—only a forging engineer can inform you fully regarding the many advantages obtainable with forgings.

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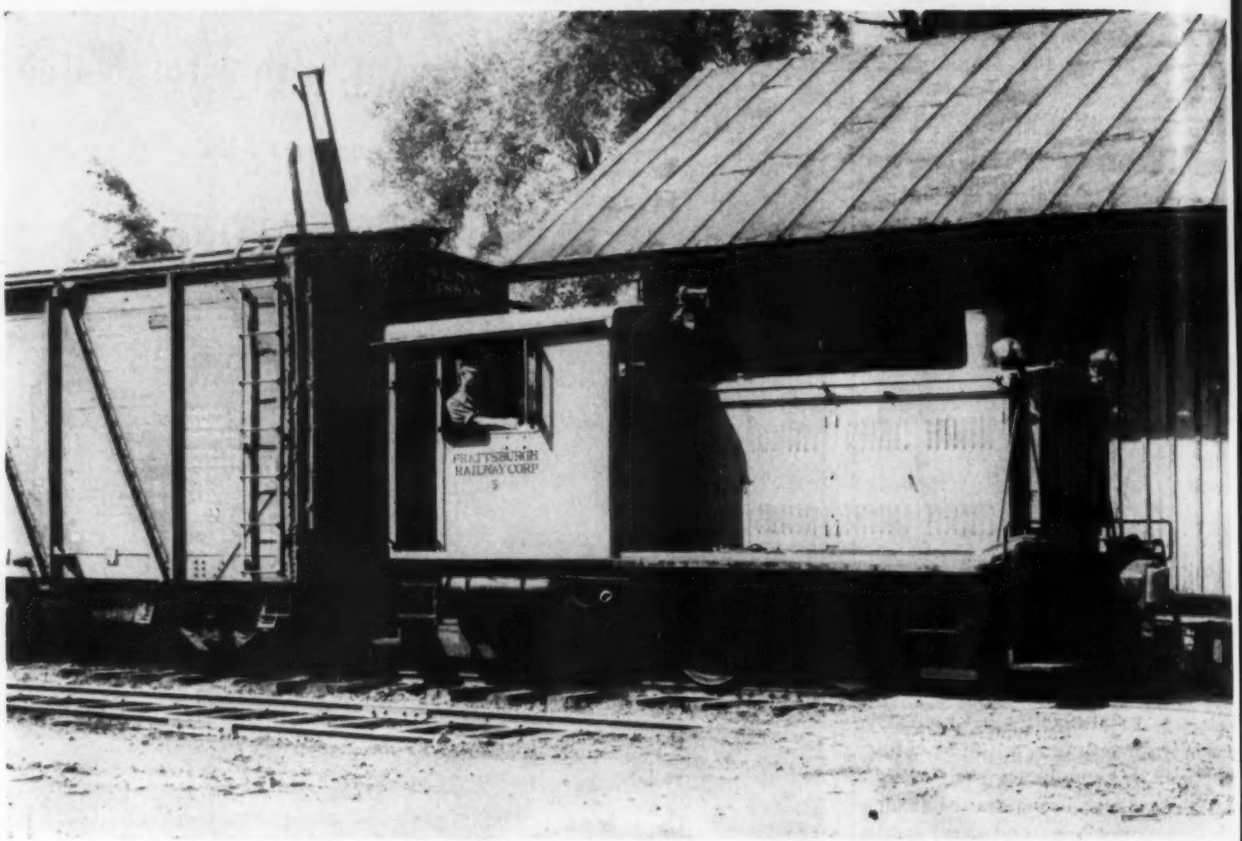

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And that's not all! Costly outage time for maintenance has been reduced to a minimum . . . true Plymouth dependability! That's where Plymouth engineering pays extra dividends of profit for plants all over the world. In switching, in intra-plant haulage, Plymouth Locomotives provide increased efficiency, steady, day-after-day dependability.

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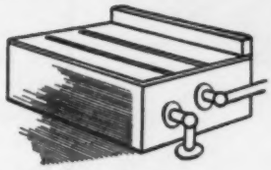
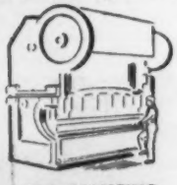


BEFORE PLATING



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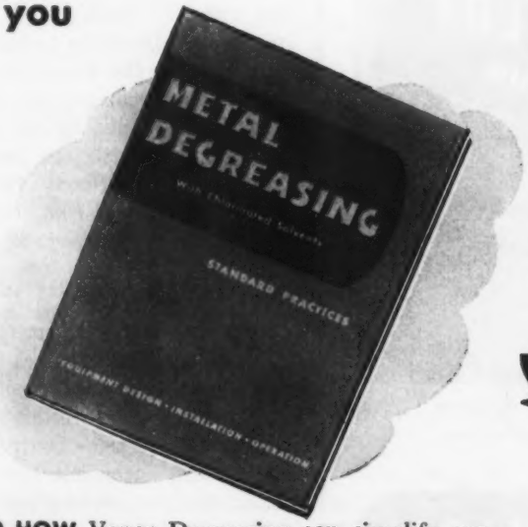

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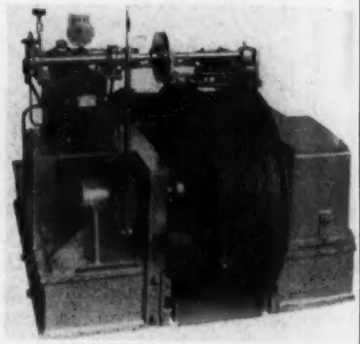
NEW

PRODUCTION IDEAS

Continued

ly from the finishing block of a wire drawing machine. Its steel construction is said to withstand the forces and loads incurred by the deceleration. Tension compensation during the run period is en-



tirely automatic. The traverse is a constant displacement type that provides adjustment for any type of lay and the foot-operated spool platen is adjustable for different size spools. Acceleration of the spooler is adjustable to the control equipment on the wire drawing machine. Deceleration of the full spool is controlled by an interlock arrangement with the main machine control. *Black Industries. For more information, check No. 37 on the postcard on p. 37.*

Power Benders

Intricate bends in metal moldings, tubes and frames can be formed on a new line of power benders that feature high torque output, all-electric controls, and manual and automatic cycle operations. Basic operating components of the machine are a rotary fixture drive and a pressure cylinder arrangement by which the work is bent to the shape of the fixture as the fixture revolves. Operating speed and torque capacity can be varied according to the size of work, by an interchange of speed-reducers and motors. In operation, the operator clamps one end of a

Turn to Page 146

Briefs and Bulletins

closed down—The plant of Eastern Stainless Steel Corp. in Baltimore was closed Sept. 1 when local officials of United Steel Workers of America (CIO) refused to grant a further extension of the 1948 contract. The union had granted two extensions of the contract. It is understood that the company had been paying its workers on the basis of a minimum rate of $1.09 per hr and had offered the union half the difference between this rate and the standard rate of $1.18½ per hr. The offer wasn't accepted.

exports slump—Both exports and imports of the U. S. dipped sharply in July from June levels. July exports totaled $896,600,000. This is about 18 pct below the $1,104,200,000 exported in June. Officials said the slump extended to all commodities but was particularly noticeable in textiles.

warehouse prices—Warehouses in a number of areas have not yet added the freight rate increase to their base prices. Whether this extra will continue to be absorbed in the future will probably be decided within the next month.

jet order—Canadair, Ltd., has received a contract from the Dept. of Defense for 100 Canadian-made versions of the F-86 Sabre interseptor jet plane. The order will amount to about $30 million. The company will spend $2 million on plant additions as a result of the order.

short strike at gary—A walkout of 43 crane operators starting Aug. 31, ended at midnight the next day after idling 1300 workers in the bar mills of Carnegie-Illinois Steel Corp. at Gary.

auto contract—Walter Reuther, CIO United Auto Workers president, threatened a strike against the Ford Motor Co. unless the company gets on with the job of negotiating a new contract.

another on—Republic Steel put No. 1 furnace at Buffalo back in blast this week, making two on out of three at its Buffalo district works. No. 1 had been taken off on July 10.

added capacity—Timken Roller Bearing Co. has placed another 120-ton openhearth in operation, bringing the company's operating rate up to 80 pct of capacity.

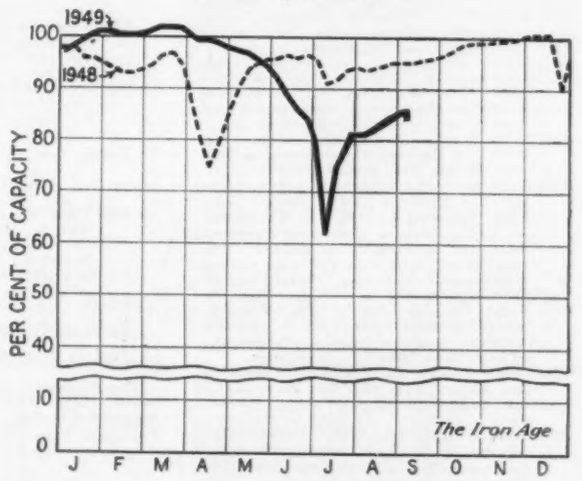
squeeze on plate—Because plate deliveries are getting extended in Chicago some fabricators of oil and gas line pipe are telling their customers that they can get faster delivery from eastern mills—provided the customer will pay $10.00 or so a ton additional for freight. So far the pipeline people have not been desperate enough to pay the higher price.

texas steel—Houston steel distributors report a dropoff in business and a return to the prewar type of highly competitive market. Sheffield Steel, following June price cuts to meet Northern mills' prices by barge, has decided to allow a will call system of steel pickup or delivery.

holiday—John L. Lewis last week notified his 3-day miners that they were to work only 2 days this week because of Labor Day. He specifically stated that Thursday was to be an "idle" day. Meanwhile coal stocks are shrinking steadily as a result of the "stabilization" plan.

correction—The iron and steel freight rate table appearing in THE IRON AGE, Sept. 1, p. 103, contained a 99-lb typographical error. The rates quoted are in cents per 100 lb, not cents per lb.

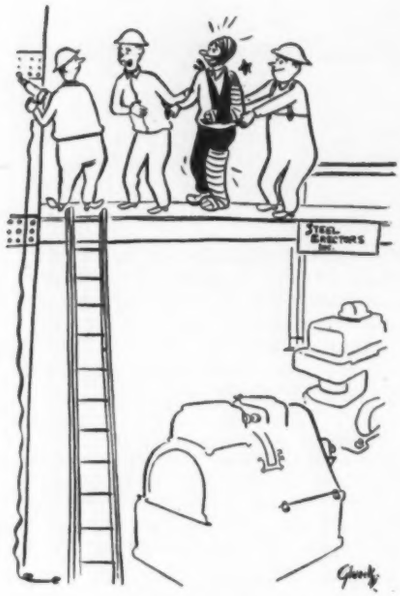
Steel Operations



District Operating Rates—Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
Aug. 28	82.5*	90.5*	83.5*	87.0	103.0*	102.0*	100.5	101.0	100.0	90.0	80.0	87.0	77.0	86.5
Sept. 4	80.5	91.0	81.5	88.0	100.0	101.0	95.5	101.0	92.0	89.0	82.5	87.0	97.5	85.0

* Revised.



"We got him to go up again before he lost his nerve."

Construction Steel Awards

Fabricated steel awards this week included the following:

8,000 Tons, Lackawanna, N. Y., addition to Bethlehem Steel Co. cold strip mill, to Bethlehem Steel Co., Bethlehem.

1200 Tons, Great Falls, Mont., Sun River Bridge to Allied Structural Steel Co., Chicago.

1081 Tons, Cumberland County, Pa., eastern extension of Turnpike, by Central Pennsylvania Quarry & Strip Co., Hazleton, Pa., to Ft. Pitt Bridge Co., Pittsburgh.

912 Tons, Lancaster County, Pa., eastern extension of Turnpike by Ralph Myers Construction Corp., Salem, Ind., to Ft. Pitt Bridge Co., Pittsburgh.

630 Tons, Memphis, parts building for International Harvester Co., through Allied Structural Steel Co., Chicago, to Bethlehem Steel Corp., Carnegie-Illinois Steel Corp., and Wisconsin Steel Co.

568 Tons, Bossier Parish, La., bridge for Louisiana Highway Department, to Virginia Bridge Co., Birmingham.

540 Tons, Ines, Ill., 12 garage sorage buildings for National Guard through Ashland Construction Co. to Hansell-Elcock Co., Chicago. Previously reported. Steel will be supplied as follows: 300 tons Inland Steel Co., 100 tons Carnegie-Illinois Steel Corp., 140 tons out of fabricators stock.

525 Tons, Dauphin County, Pa., Pennsylvania Turnpike Section 22 B, through Patterson Construction Co., Pittsburgh, to Bethlehem Steel Co., Bethlehem.

400 Tons, Creston, Ia., power plant through Des Moines Steel Co., Des Moines, Ia., to Carnegie-Illinois Steel Corp., Bethlehem.

400 Tons, Canton, Ill., boiler house building No. 9 for International Harvester Co., through Allied Structural Steel Co., Chicago, to Bethlehem Steel Corp., Carnegie-Illinois Steel Corp. and Wisconsin Steel Co.

400 Tons, La Grange, Ill., Electro Motive Corp., building extension to J. T. Ryerson and Sons, Chicago.

302 Tons, Bienville and Bossier Parishes, La., bridge for Louisiana Highway Department, to Virginia Bridge Co., Birmingham.

260 Tons, Madison, Wis., Veterans Hospital to American Bridge Co., Pittsburgh.

225 Tons, Milwaukee, International Harvester Co. warehouse through Allied Structural Steel Co., Chicago, to Bethlehem Steel Corp., Carnegie-Illinois Steel Corp. and Wisconsin Steel Co.

210 Tons, Joliet, Ill., West Side Elementary School Building through Allied Structural Steel Co. to Carnegie-Illinois Steel Corp., Bethlehem.

130 Tons, Melrose Park, Ill., Italian Old Peoples Home to Mississippi Valley Structural Steel Co., Chicago.

125 Tons, Waukegan, Ill., Coca Cola bottling plant to Hansell-Elcock Co., Chicago.

Fabricated steel inquiries this week included the following:

1550 Tons, Corpus Christi, Tex., Wilson Building.

1135 Tons, Waterbury, Conn., viaduct over Mill St., Baldwin St., Mad River and New Haven R.R. tracks and approach on Waterbury Expressway.

195 Tons, Waterbury, Conn., 3 span composite deck bridge with concrete abutments and piers over Nagatuck River, South Leonard St.

150 Tons, Princeton, N. J., nurses home for Princeton Hospital, due Sept. 19.

Reinforcing bar awards this week included the following:

6000 Tons, Bethesda, Md., National Health Institute hospital, to John McShain, Philadelphia.

1250 Tons, Hamburg, N. Y., new Ford Motor Co. stamping plant, to Bethlehem Steel Co., Bethlehem.

900 Tons, Lancaster County, Pa., Pennsylvania Turnpike Section 26 B, Loyal Hanna Co., Carnegie, Pa., low bidder.

900 Tons, Dauphin County Pa., Pennsylvania Turnpike Section 22 B, Patterson Construction Co., Pittsburgh, low bidder.

700 Tons, Berks County, Pa., Pennsylvania Turnpike Section 26 C, C. J. Langenfelder & Sons, Baltimore, low bidder.

630 Tons, Chester County, Pa., Pennsylvania Turnpike Section 27 A, C. J. Langenfelder & Sons, Baltimore, low bidder.

375 Tons, Birmingham, Crippled Children's Hospital, to Ceco Steel Products Corp., Birmingham.

Reinforcing bar inquiries this week included the following:

170 Tons, Waterbury, Conn., viaduct over Mill St., Baldwin St., Mad River and New Haven R.R. tracks and approach on Waterbury Expressway.

119 Tons, Boston, Charles River Reservation, new marginal conduit between Mt. Vernon and Dartmouth Sts. with overflow chambers.

2700 Tons, Philadelphia, Queen Lane filtration plant for City of Philadelphia, to be rebid on Sept. 28.

Steel piling inquiries this week included the following:

129 Tons, Waterbury, Conn., viaduct over Mill St., Baldwin St., Mad River and New Haven, R. R. and approach on Waterbury Expressway, F. W. Disbrow, New Milford, Conn., resident engineer of construction.

Railroad car awards this week included the following:

The Louisville and Nashville R.R. has purchased 1000 70-ton hopper cars from Pullman-Standard Car Mfg. Co., the cars to be built at Pullman's Bessemer, Ala. plant.

Turnpike Contracts Ending

Philadelphia—With the letting of contracts for road-building work on Sections 26 and 27 on which bids were opened last week, the contracting for authorized road-building work on the Pennsylvania Turnpike comes to an end. Future developments in the construction of this high speed toll road are expected to involve extensions from Pittsburgh to join up with Ohio roads.

Schedules Work on Ford Plant

Buffalo—Darrin & Armstrong of Detroit has been awarded contracts for the piers and other foundation work of the new body stamping plant of the Ford Motor Co. at Hamburg, N. Y. Work was scheduled to start Aug. 30 and most of the substructure is expected to be completed before winter. Above-ground construction is slated to begin next spring and full production is expected to be attained in 2 years.

Fabrication of the 11,000-odd tons of structural steel that will go into the 1,000,000-sq ft building may be done by Bethlehem Steel Co. at its Rankin, Pa., fabricating plant, because Bethlehem's local fabricating facilities are reported booked to capacity. Bethlehem also has the contract for 1250 tons of reinforcing steel for the foundations.

Construction Awards Up 5 Pct

Chicago—Dollar value of construction awards in the five state area around Chicago was up 5 pct in July over June. A 19 pct increase in nonresidential construction was recorded and public works construction was up 20 pct alone.

Construction awards in the utility field were down 50 pct in July compared to June and were still below July 1948.

Use Rail Steel Bars

Philadelphia—The contract for the Bethesda, Md., hospital for the National Health Institute awarded recently to John McShain of Philadelphia permits the use of reinforcing steel made from rail steel bars. There may be a saving of some $20 a ton in the use of this type of steel. Reinforcing steel involved in the contract will amount to about 6000 tons.

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Uranium Bearing Ore Deposit Discovered in Utah

Salt Lake City — A potentially important discovery of uranium bearing ore in the Marysvale, Utah district appears to contradict all the accepted theories concerning secondary uranium deposits.

Heretofore the theory has been that secondary uranium ores do not occur over large areas and that they are not highly disseminated through the formations. Ordinarily (in this country at least) they appear in small lenses in sandstone (such as the carnotite in Colorado and Utah) or in narrow veins in granite formations. Neither do soluble secondary uranium ores usually persist to a depth of more than a few feet at the most.

But in the Marysvale discovery all these generally accepted rules are contradicted. A sulphur colored ore, which appears to be autonite, is widely disseminated in an andisitic porphyry which is bounded on the north and south by rhyolite porphyry. It has been drilled to a depth of 135 ft along a 30° slope for a distance of 800 ft along the slope and is several hundred ft in width.

Autonite is a calcium-uranium-phosphate which in the pure state contains 60 pct uranium oxide. It fluoresces brightly, as does the Marysvale ore. Small samples of the discovery have shown a uranium content of 0.36 to 0.76 pct which is within the range of shipping quality. Its high solubility indicates an easy milling problem and the size of the deposits, which might be much greater than explorations to date have shown, suggest that it could be mined by low-cost open pit methods.

The property is being developed by the Bullion Monarch Mining Co.

Steals Time, Arrested

Elizabeth, N. J. — Phelps Dodge Copper Products Corp. has filed a larceny charge against a former employee, accusing him of stealing company time, materials and overhead to make a television antenna. The employee, Charles McLaren, was discharged following the alleged theft, and thereupon sued the company for back pay. The criminal charge followed his suit.

McLaren is a former president of local 441, United Electrical, Radio and Machine Workers, CIO, who led an 8-month strike against Phelps Dodge in 1946. He is accused of theft of $50.04; including time at $29.75, material at $10.26 and overhead at $10.03. He denies the charge.

Senate Passes Minimum Wage

Washington — Last week the Senate passed legislation raising the national minimum wage from 40¢ to 75¢ per hr. Passage of this legislation is less of a victory than the Administration claims. Although the new law will increase hourly wages for about 1,250,000 workers, it will exempt about half as many workers already covered by the existing law.

Legislation passed by the House exempts about 1 million workers from coverage, while Senate restrictions remove about 250,000 persons from coverage. A Senate-House conference is now trying to compromise these differences in order to get an acceptable bill on Mr. Truman's desk within the next few weeks.

May Build New Plant in South

Chicago—Teleweld, Inc. of Chicago, is considering a new plant in Memphis, Tenn. which would be used to manufacture pressure vessels. Teleweld officials report the market for pressure vessels in the south indicates a strong demand over the next 4 years. One of the reasons for considering a plant in Memphis, is that the company can take advantage of water shipments from the steel producing centers. Roughly the all rail rate on plates from Chicago to Memphis is 90¢ per 100 lb while barge rates in barge lots figures out about $4.32 a net ton.

British Industrial Team To Study Our Engine Industry

Washington—American methods and techniques used in manufacturing internal combustion engines will be studied by a British productivity team during a 6-week visit to the U. S. The 14-man group, composed of supervisors, technicians and workers from the industry in Great Britain, is scheduled to sail for the United States on Oct. 7.

John Richard Bergne-Coupland, works manager of Ruston & Hornsby, Ltd., Lincoln, has been selected as leader of the British group. Herbert Cowper, technical officer of the British Internal Combustion Engineers Manufacturers Assn., will act as team secretary. Other members of the group are:

Supervisory Group—Wilfred Torkington Mirrlees, Bickerton & Co., Ltd., Hazel Grove, Stockport; Louis de Gebert, Davey Paxman & Co., Colchester; and Peter Leslie Wright Shovelton, R.A., Lister & Co., Dursley, Glos.

Technical Group—Michael Alexander Plit, Stuart Turner, Ltd., Henley-on-Thames; Jack Calverley, Peter Brotherhood, Ltd., Peterborough; Hans Silverstein, J. & H. Mclaren, Ltd., Staines, Middlesex; and Thomas Smith, J. & H. MaClaren, Ltd., Staines, Middlesex.

Workshop Group—Arthur Edward Sendall, Ruston & Hornsby, Ltd., Lincoln; Edwin Sleigh, Mirrlees, Bickerton & Co, Ltd., Hazel Grove, Stockport; Ronald James Ford, R.A., Lister & Co., Dursley, Glos; John Slater Nice, Davey Paxman & Co., Colchester; and Frank Rogers, Brush Electrical Engineering Co., (Petters, Ltd.), Loughborough.

"I'll give you a price as soon as I get a quote on U. S. Steel common."

Nonferrous METALS OUTLOOK

Market Activities

by John Anthony

Spread develops in zinc prices . . . Tin futures sales expected to be reopened by British Ministry . . . Lead buying less active. . . . Copper and lead producers absorb freight rise.

New York—A half cent spread developed in zinc prices last week when an advance of ½¢ in the price of Prime Western was taken by one Midwestern producer on Sept. 1, and followed the same day by another. The following day, the advance was followed by two additional producers and a producer of Special High Grade raised its price ¼¢ to cover the spread in the market.

There was some surprise in industry circles that the advance had come at this time on the verge of a possible strike in the steel industry. But buying of Prime Western and Special High Grade has been very active in the last few weeks. High Grade zinc has not been moving well. It is believed that some of this business has resulted from hedging against a steel strike by consumers of galvanized sheet and pipe. Some zinc producers have been eating into their inventories. But in the event of a strike, the market is expected to receive a severe setback.

Tin Futures to Reopen

The British Ministry of Supply placed an embargo on tin future sales after the first two days of open market operations which saw the price of Straights tin drop to a range of 98¢ to $1.00, delivered to dock New York. The U. S. government had previously been buying Straights tin at $1.02 f.o.b. Singapore.

It is learned in the trade that the British Ministry is expected to free up futures trading again next week. This will permit buying again with discounted sterling futures. In the meantime tin buyers are staying out of the market.

Members of the Metals Group of the Commodity Exchange met recently to determine whether trading in tin futures could be begun by the exchange under present government controls.

Lead Market Quiet

The lead market is not as active as it has been recently. Producers estimate that sales for September shipment to date are about 75 pct of August, which was the high month of the year. Since all consumers are reported to be buying very conservatively, it is quite possible that this total may be raised considerably before the end of the month.

The new freight rate increase that went into effect on Sept. 1 brought the New York zinc price up by 2¢ a 100 lb. Copper and lead producers are absorbing the freight rise. But it is not certain that they will continue to do so indefinitely.

NONFERROUS METALS PRICES

	Aug. 31	Sept. 1	Sept. 2	Sept. 3	Sept. 6
Copper, electro, Conn.	17.625	17.625	17.625	17.625	17.625
Copper, Lake, Conn.	17.75	17.75	17.75	17.75	17.75
Tin, Grade A, New York	$1.03	$1.03	$1.03	$1.03	$1.03
Zinc, East St. Louis	10.00	10.00–10.50	10.00–10.50	10.00–10.50	10.00–10.50
Lead, St. Louis	14.925–14.975	14.925–14.975	14.925–14.975	14.925–14.975	14.925–14.975

Note: Quotations are going prices.

MONTHLY AVERAGE PRICES

The average prices of the major nonferrous metals in August based on quotations appearing in THE IRON AGE, were as follows:

	Cents Per Pound
Electrolytic copper, Conn. Valley	17.625
Lake copper, Conn. Valley	17.75
Grade A tin, New York	$1.03
Zinc, East St. Louis	10.00
Zinc, New York	10.70
Lead, St. Louis	14.79
Lead, New York	14.99

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Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, 10,000 lb, freight allowed	17.00
Aluminum pig	16.00
Antimony, American, Laredo, Tex.	38.50
Beryllium copper, 3.75-4.25% Be dollars per lb contained Be	$24.50
Beryllium aluminum 5% Be, dollars per lb contained Be	$52.00
Bismuth, ton lots	$2.00
Cadmium, del'd	$2.00
Cobalt, 97-99% (per lb)	$1.80 to $1.87
Copper, electro, Conn. Valley	17.625
Copper, lake, Conn. Valley	17.75
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$100 to $110
Lead, St. Louis	14.925-14.975
Lead, New York	15.125
Magnesium, 99.8+%, f.o.b. Freeport, Tex.	20.50
Magnesium, sticks, carlots	24.50
Mercury, dollars per 76-lb flask f.o.b. New York	$72 to $75
Nickel, electro, f.o.b. New York	42.93
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$69 to $72
Silver, New York, cents per oz.	73.00
Tin, Grade A, New York	$1.02
Zinc, East St. Louis	10.00 to 10.50
Zinc, New York	10.72 to 11.22
Zirconium copper, 10-12 pct Zr, per lb contained Zr	$12.00

Remelted Metals

Brass Ingot

(Published prices, cents per lb delivered, carloads)

85-5-5-5 ingot		
No. 115	15.00*	16.50
No. 120	14.50*	16.00
No. 123	14.00*	15.50
80-10-10 ingot		
No. 305		21.00
No. 315		18.00
88-10-2 ingot		
No. 210		27.50
No. 215		24.50
No. 245	17.50*	19.75
Yellow ingot		
No. 405	12.75*	14.25
Manganese bronze		
No. 421		19.00

*F.o.b. Philadelphia.

Aluminum Ingot

(Cents per lb, lots of 30,000 lb)

95-5 aluminum-silicon alloys	
0.30 copper, max.	18.75-19.00
0.60 copper, max.	18.50-18.75
Piston alloys (No. 122 type)	16.75
No. 12 alum. (No. 2 grade)	15.50-16.00
108 alloy	16.25-16.75
195 alloy	17.25-17.50
13 alloy	18.50-18.75
AXS-679	16.50-16.75
1% Ti, Aluminum, f.o.b., Eddystone, Pa.	
Low copper	31.00
2% copper	28.00

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97½%	17.50-18.00
Grade 2—92-95%	16.50-17.00
Grade 3—90-92%	15.50-16.00
Grade 4—85-90%	14.50-15.00

Electroplating Supplies

Anodes

(Cents per lb, freight allowed, in 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	34⅝
Electrodeposited	28⅞
Rolled, oval, straight, delivered	31.46
Ball anodes	32⅞
Brass, 80-20	
Cast, oval, 15 in. or longer	30⅝
Zinc, oval, 99.83%, f.o.b. Detroit	17¼
Ball anodes	16¼
Nickel 99 pct plus	
Cast	59.00
Rolled, depolarized	60.00
Cadmium	$2.15
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	79

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	45.00
Copper sulfate, 99.5 crystals, bbl.	11.10
Nickel salts, single or double, 4-100 lb bags, frt allowed	13.00
Nickel chloride, 300 lb bbl	24.50
Silver cyanide, 100 oz lots, per oz.	59
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc sulfate, crystals, 22.5 pct, bags	6.75
Zinc sulfate, 25 pct, flakes, bbl.	7.75

Mill Products

Aluminum

(Base prices, cents per pound, base 30,000 lb, f.o.b. shipping point, freight allowed)

Flat Sheet: 0.188 in., 2S, 3S, 26.9¢; 4S, 61S-O, 28.8¢; 52S, 30.9¢; 24S-O, 24S-OAL, 29.8¢; 75S-O, 75S-OAL, 36.3¢; 0.081 in., 2S, 3S, 27.9¢; 4S, 61S-O, 30.2¢; 52S, 32.3¢; 24S-O, 24S-OAL, 30.9¢; 75S-O, 75S-OAL, 38¢; 0.032 in., 2S, 3S, 29.5¢; 4S, 61S-O, 33.5¢; 52S, 36.2¢; 24S-O, 24S-OAL, 37.9¢; 75S-O, 75S-OAL, 47.6¢.

Plate: ¼ in. and heavier: 2S, 3S, F, 23.8¢; 4S-F, 26¢; 52S-F, 27.1¢; 61S-O, 26.6¢; 24S-F, 24S-FAL, 27.1¢; 75S-F, 75S-FAL, 33.9¢.

Extruded Solid Shapes: Shape factors 1 to 4, 33.6¢ to 64¢; 11 to 13, 34.6¢ to 76¢; 23 to 25, 36.7¢ to $1.05; 35 to 37, 44¢ to $1.53; 47 to 49, 63.5¢ to $2.20.

Rod, Rolled: 1.064 to 4.5 in., 2S-F, 3S-F, 34¢ to 30.5¢; Cold-finished, 0.375 to 3.5 in., 2S, 3S, 36.5¢ to 32¢.

Screw Machine Stock: Drawn, ⅛ to 11/32 in., 11S-T3, R317-T4, 49¢ to 38¢; cold-finished, ⅜ to 1½ in., 11S-T3, 37.5¢ to 35.5¢; ⅜ to 2 in., R317-T4, 37.5¢ to 34.5¢; rolled, 1 9/16 to 3 in., 11S-T3, 35.5¢ to 32.5¢; 2½ to 3⅝ in., R317-T4, 33.5¢ to 32.5¢. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in.: 2S, 36¢ to 26.5¢; 52S, 44¢ to 32¢; 56S, 47¢ to 38.5¢; 17S-T4, 50¢ to 34.5¢; 61S-T4, 44.5¢ to 34¢; 75S-T6, 76¢ to 55¢.

Magnesium

(Cents per lb, f.o.b. mill, freight allowed Base quantity 30,000 lb)

Sheets and Plate: Ma, FSa, ¼ in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 12, 63¢-65¢; 14, 69¢-74¢; 16, 76¢-81¢; 18, 84¢-89¢; 20, 96¢-$1.01; 22, $1.22-$1.31; 24, $1.62-$1.75. Specification grade higher.

Extruded Round Rod: M, diam in., ¼ to 0.311, 58¢; ½ to ¾, 46¢; 1¼ to 1.749, 43¢; 2½ to 5, 41¢. Other alloys higher.

Extruded Square, Hex. Bar: M, size across flats, in., ¼ to 0.311, 61¢; ½ to 0.749, 48¢; 1¼ to 1.749, 44¢; 2½ to 4, 42¢. Other alloys higher.

Extruded Solid Shapes, Rectangle: M, in weight per ft, for perimeters of less than size indicated, 0.10 to 0.11 lb per ft, per. up to 3.5 in., 55¢; 0.22 to 0.25 lb per ft, per. up to 5.9 in., 51¢; 0.50 to 0.59 lb per ft, per. up to 8.6 in., 47¢; 1.8 to 2.59 lb per ft, per. up to 19.5 in., 44¢; 4 to 6 lb per ft, per. up to 28 in., 43¢. Other alloys higher.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, ¼ to 5/16, $1.14; 5/16 to ⅜, $1.02; ½ to ⅝, 76¢; 1 to 2 in., 65¢; 0.065 to 0.082, ⅜ to 7/16, 85¢; ⅝ to ¾, 62¢; 1 to 2 in., 57¢; 0.165 to 0.219, ⅝ to ¾, 54.5¢; 1 to 2 in., 53¢; 3 to 4 in., 49¢. Other alloys higher.

Nickel and Monel

(Base prices, cents per lb, f.o.b. mill)

	Nickel	Monel
Sheets, cold rolled	60	47
Strip, cold-rolled	66	50
Rods and bars	56	45
Angles, hot-rolled	56	45
Plates	58	46
Seamless tubes	89	80
Shot and blocks	..	40

Copper, Brass, Bronze

(Cents per pound, freight prepaid on 200 lb)

	Sheets	Rods	Extruded Shapes
Copper	31.30	....	30.90
Copper, hot-rolled	....	27.15	....
Copper, drawn	....	28.40	....
Low brass	29.47	29.16	32.38*
Yellow brass	28.19	27.88	31.20*
Red brass	29.89	29.58	32.80*
Naval brass	33.13	27.19	28.44
Leaded brass	....	22.76	26.85
Commercial bronze	30.84	30.53	33.50*
Manganese bronze	36.63	30.54	32.04
Phosphor bronze	50.47	50.72	....
Muntz metal	31.15	26.71	27.96
Everdur, Herculoy, Olympic, etc	36.19	35.14	....
Nickel silver, 10 pct	39.12	41.41	41.44
Architectural bronze	....	....	26.85

*Seamless tubing.

Scrap Metals

Brass Mill Scrap

(Cents per pound; add ½¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	14⅝	13⅞
Yellow brass	12	11
Red brass	13¼	12½
Commercial bronze	13½	12⅝
Manganese bronze	11⅝	10⅞
Leaded brass rod ends	11¾	....

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	14.50-14.75
No. 2 copper wire	13.50-13.75
Light copper	12.50-12.75
Refinery brass	12.50*
Radiators	9.00-9.25

*Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer)

No. 1 copper wire	14.25
No. 2 copper wire	13.25
Light copper	12.25
No. 1 composition	11.25
No. 1 comp. turnings	10.75
Rolled brass	9.50
Brass pipe	10.25
Radiators	9.25
Heavy yellow brass	8.50
Aluminum	
Mixed old cast	10.00
Mixed old clips	10.00
Mixed turnings, dry	8.00
Pots and pans	10.00
Low copper	11.50

Dealers' Scrap

(Dealers' buying prices, f.o.b. New York in cents per pound)

Copper and Brass	
No. 1 heavy copper and wire	13—13⅛
No. 2 heavy copper and wire	12—12⅛
Light copper	11—11⅛
Auto radiators (unsweated)	8— 8⅛
No. 1 composition	9⅛— 9⅛
No. 1 composition turnings	8¾— 9
Clean red car boxes	8— 8⅛
Cocks and faucets	8— 8⅛
Mixed heavy yellow brass	6¾— 7
Old rolled brass	8— 8⅛
Brass pipe	8⅛— 8¾
New soft brass clippings	10 —10½
Brass rod ends	7¾— 8
No. 1 brass rod turnings	7½— 7¾
Aluminum	
Alum. pistons and struts	4¾— 5
Aluminum crankcases	7— 7½
2S aluminum clippings	10½—11
Old sheet and utensils	7— 7½
Borings and turnings	4
Misc. cast aluminum	7— 7½
Dural clips (24S)	7— 7½
Zinc	
New zinc clippings	6— 6½
Old zinc	4— 4½
Zinc routings	2¾— 3¼
Old die cast scrap	3— 3¼
Nickel and Monel	
Pure nickel clippings	16 —17
Clean nickel turnings	14 —15
Nickel anodes	16 —17
Nickel rod ends	16 —17
New Monel clippings	10½—11½
Clean Monel turnings	6 — 7
Old sheet Monel	8 — 9
Old Monel castings	7 — 8
Inconel clippings	10 —11
Nickel silver clippings, mixed	6 — 7
Nickel silver turnings, mixed	5½— 6
Lead	
Soft scrap, lead	11½—11¾
Battery plates (dry)	6½— 6¾
Magnesium	
Segregated solids	9 —10
Castings	5½— 6½
Miscellaneous	
Block tin	73 —75
No. 1 pewter	47 —49
No. 1 auto babbitt	40 —42
Mixed common babbitt	11½—12
Solder joints	10½—11
Siphon tops	45 —47
Small foundry type	12¾—13½
Monotype	12 —12½
Lino. and stereotype	11½—12
Electrotype	10½—11
New type shell cuttings	10¾—10¾
Hand picked type shells	4
Lino. and stereo. dross	5½— 5¾
Electro. dross	4¼— 4½

MARKETS—PRICES—TRENDS

SCRAP
Iron & Steel

UNIVERSITY OF MICHIGAN LIBRARIES

Prices Advance in A Confused Market

Prices continued to advance this week but not on so large a scale as during the previous 2 weeks. There are still no indications of large-scale mill buying. Dealers are still hanging on to their scrap and brokers are having trouble finding enough material at current prices to fill their old commitments. Consumers and brokers were buying out of the district material at higher prices than those prevailing locally. The trade is waiting to see the outcome of the steel-labor dispute and feel confident that the mills will again enter the market for more material when this controversy is settled.

PITTSBURGH—A district mill stepped into the market here for a substantial tonnage of No. 1 heavy melting at $25.00, up 50¢ over last week. It was the first instance of mill buying since late July, when a low of $21.00 was established. Most mills are staying out of the market until the steel-labor dispute is resolved. Machine shop turnings and short turnings were up $1.50 to $18.00 and $20.00, respectively, on the basis of sales. Mixed yard cast, heavy breakable cast and railroad grades rose $1.00.

CHICAGO—Brokers continued to have trouble this week in getting Chicago dealers to sell their scrap. As a result, fair tonnages were placed by some brokers in outlying areas. Part of this was an educational program to local dealers. The rest represents a partial shortage of scrap which could buildup into another acute shortage this winter should the mills go through the first quarter at present operating rates. Mills have good inventories, but they still don't have their winter inventories so that the big squeeze is still ahead.

PHILADELPHIA—There was no buying of steel grades here but it is understood that small tonnages will be placed at higher prices this week. There was a sale of machine shop turnings at $16.00. Cast grades were sold at higher prices. Low phos is still inactive. Quotations on steel grades are raised by $1.00 to $1.50 on the basis of an appraisal of the market. Cast grades are up by $1.00 to $2.00 a ton.

NEW YORK—The market is up again here with some of the largest single advances of the year. Sales are still small and the amount of material being moved is limited. Dealer scrap has been slow coming in and brokers are finding it difficult to get material. Dealers are still reluctant to part with their high-priced material and have shown every indication of hanging on to it for higher prices. Foundry grades showed the greatest strength with some items up $6.00. No. 1 heavy melting is being quoted on an appraisal of all market factors.

DETROIT—The local scrap market continues to show unmistakable signs of strength and prices of most grades have advanced here again this week. The preference for No. 1 bundles both by mill buyers and speculative interests is reflected in the premium for this grade. Meanwhile, unconfirmed reports of prices ranging from $25.00 to $30.00 for factory bundles continue to come in. Blast furnace grades are also stronger this week and cast iron continues in strong demand.

CLEVELAND—With sales in nearby districts providing a stimulant, the scrap market here and in the Valley was stronger and wilder this week. On appraisal of all factors involved, No. 1 heavy melting was quotable at $27.50 in the Valley and may go higher. Some major brokers are stuck with orders that looked high 10 days ago and which now cannot be covered at less than a $2.00 loss, or more. Short covering is supposed to be over, but the orders are still out and not completed. Dealers are hanging on to their tonnage in most cases, and if they can sit the mills out, they will get the top dollar. Mills are talking lower operations but starting blast furnaces to beat the scrap rap.

BOSTON—Recent price advances are being maintained, and sentiment is generally better, but activity is still far below normal. Buying has been meager at the higher prices and a small amount of No. 1 steel has been sold above the going market prices. The real strength of the market is not indicated since some brokers are trying to cover their old commitments. There is no mill buying. Cast has shown some signs of life, but likewise activity is still far below what it should be.

BUFFALO—Prices surged forward with advances of $3.00 to $7.00 under the leadership of cast grades. Mixed yard cast sold at $35.00, showing the maximum upturn as foundries raised their bids to get supplies. Sales of shoveling turnings at $19.00 and of machine shop turnings at $17.00 to a nearby consumer caused a spurt in the lighter stuff. Reports that mills were buying out of the district at fancy prices while virtually ignoring the local scene resulted in a runup of $4.00 to $5.00 in openhearth materials. No. 1 heavy melting was boosted to $26.00-$27.00, No. 2 to $23.00-$24.00, and other listings enjoyed similar advances — all without dislodging the mills from the sidelines here. The key to the whole price situation admittedly is the steel strike—if production halts in mid-month, there will be no market, but if the stoppage is averted, everything will go up. That is the consensus of brokers' and dealers' ideas in this center.

CINCINNATI—Mills bought limited tonnages here in a market that was picking up sympathetic strength steadily from other districts. The tendency seems to be to buy as cheaply as possible from the trade and pay railroads and industrial plants the high prices if necessary, which keeps the market confused and somewhat uncertain. Dealers are still hanging on, however. Some brokers paid $28.00 for railroad heavy melting at Louisville. Foundries continue to increase shipments but most grades are keeping ahead of demand.

BIRMINGHAM—Electric furnace grades have advanced in price here and the undertone is very strong for openhearth grades of steel. The only material to show any weakness is stove plate. Movement still is slow, with dealers holding back in the expectation of seeing prices generally go higher.

ST. LOUIS—The scrap iron market continues strong, following the purchase here by a leading mill of melting grades. Foundry grades are also higher but largely on activity of the brokers and dealers. Higher prices have had the effect of a slight improvement in the movement to the district.

In 16 years Mr. Davis has changed a profit-less orchard into a prosperous multi-thousand-dollar business in McIntosh apples. "With steel we mechanized and built our business", Davis states.

In 1933 Jonathan Davis bought over 200 acres of run-down apple orchard in Bolton, Massachusetts. Erosion had left deep gullies. The trees were puny, the crop scant. But in graduate work at the University of Massachusetts, Davis had learned a lot about apple growing (pomology). He figured he could revive almost any sick orchard.

His first move was to start acquiring modern tools. "The machine has taken over the orchard", he says. "It won't be long before it replaces the bee for cross-pollenization — we're experimenting with that right now." With his 200 implements and machines, over 200 tons of steel in all, Davis has done wonders. His production costs have dropped and his yield of 500 bushels an acre is tops for that section.

Thus in orchards and fields all over America, *steel*, in the form of modern implements, contributes to the farmer's welfare and helps feed the nation. It's a big job, one of steel's many big jobs, which calls for a large, well-managed industry capable of volume production at a fair price. Among all the countries, only America has a steel industry big enough and efficient enough to make possible a standard of living such as we enjoy.

AMERICAN IRON AND STEEL INSTITUTE

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UNIVERSITY OF MICHIGAN LIBRARIES

Scrap IRON & STEEL Prices

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$24.50 to $25.00
No. 2 hvy. melting	22.50 to 23.00
No. 1 bundles	24.50 to 25.00
No. 2 bundles	20.50 to 21.00
Machine shop turn.	17.50 to 18.00
Mixed bor. and ms. turn.	17.50 to 18.00
Shoveling turnings	19.50 to 20.00
Cast iron borings	18.50 to 19.00
Low phos. plate	26.50 to 27.00
Heavy turnings	21.00 to 21.50
No. 1 RR. hvy melting	25.50 to 26.00
Scrap rails, random lgth.	28.00 to 29.00
Rails 2 ft and under	32.00 to 33.00
RR. steel wheels	27.00 to 28.00
RR. spring steel	27.00 to 28.00
RR. couplers and knuckles	27.00 to 28.00
No. 1 machinery cast.	36.00 to 37.00
Mixed yard cast.	33.00 to 34.00
Heavy breakable cast.	27.00 to 28.00
Malleable	29.00 to 30.00

Chicago

No. 1 hvy. melting	$24.00 to $25.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 factory bundles	24.00 to 25.00
No. 1 dealers' bundles	23.00 to 24.00
No. 2 dealers' bundles	19.00 to 20.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	15.00 to 16.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	16.00 to 17.00
Low phos. forge crops	29.00 to 30.00
Low phos. plate	27.00 to 28.00
No. 1 RR. hvy. melting	27.00 to 28.00
Scrap rails, random lgth.	34.00 to 35.00
Rerolling rails	39.00 to 40.00
Rails 2 ft and under	40.00 to 41.00
Locomotive tires, cut	38.00 to 39.00
Cut bolsters & side frames	31.00 to 32.00
Angles and splice bars	34.00 to 35.00
RR. steel car axles	38.00 to 39.00
No. 3 steel wheels	30.00 to 31.00
RR. couples and knuckles	31.00 to 32.00
No. 1 machinery cast.	41.00 to 42.00
No. 1 agricul. cast.	38.00 to 39.00
Heavy breakable cast.	31.00 to 32.00
RR. grate bars	29.00 to 30.00
Cast iron brake shoes	29.00 to 30.00
Cast iron car wheels	34.00 to 35.00
Malleable	34.00 to 35.00

Philadelphia

No. 1 hvy. melting	$22.00 to $23.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 bundles	22.00 to 23.00
No. 2 bundles	19.00 to 20.00
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	15.00 to 16.00
Shoveling turnings	16.00 to 17.00
Low phos. punchings, plate	25.00 to 26.00
Low phos. 5 ft and under	24.00 to 25.00
Low phos. bundles	23.50 to 24.50
Hvy. axle forge turn.	22.00 to 23.00
Clean cast chem. borings	19.50 to 20.50
RR steel wheels	24.00 to 25.00
RR spring steel	24.00 to 25.00
No. 1 machinery cast	33.00 to 34.00
Mixed yard cast	29.00 to 30.00
Heavy breakable cast	29.00 to 30.00
Cast iron carwheels	31.00 to 32.00
Malleable	28.00 to 29.00

Cleveland

No. 1 hvy. melting	$24.50 to $25.00
No. 2 hvy. melting	21.50 to 22.00
No. 1 bushelings	24.50 to 25.00
No. 1 bundles	24.50 to 25.00
No. 2 bundles	19.50 to 20.00
Machine shop turn.	16.50 to 17.00
Mixed bor. and turn.	19.50 to 20.00
Shoveling turnings	19.50 to 20.00
Cast iron borings	19.50 to 20.00
Low phos. 2 ft and under	27.00 to 27.50
Steel axle turn.	24.50 to 25.00
Drop forge flashings	24.50 to 25.00
No. 1 RR. hvy. melting	26.00 to 27.00
Rails 3 ft. and under	38.00 to 39.00
Rails 18 in. and under	39.00 to 40.00
No. 1 machinery cast.	39.00 to 40.00
RR. cast.	39.00 to 40.00
RR grate bars	30.00 to 31.00
Stove plate	33.00 to 34.00
Malleable	34.00 to 35.00

Youngstown

No. 1 hvy. melting	$27.00 to $27.50
No. 2 hvy. melting	24.00 to 24.50
No. 1 bundles	27.00 to 27.50
No. 2 bundles	22.00 to 22.50
Machine shop turn.	19.00 to 19.50
Shoveling turnings	22.00 to 22.50
Cast iron borings	22.00 to 22.50
Low phos. plate	29.50 to 30.00

Buffalo

No. 1 hvy. melting	$26.00 to $27.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 busheling	23.00 to 24.00
No. 1 bundles	23.00 to 24.00
No. 2 bundles	21.00 to 22.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	18.00 to 19.00
Low phos. plate	28.00 to 29.00
Scrap rails, random lgth.	27.00 to 28.00
Rails 18 in. and under	32.00 to 33.00
RR. steel wheels	28.00 to 29.00
RR. spring steel	28.00 to 29.00
RR. couplers and knuckles	28.00 to 29.00
No. 1 cupola cast	36.00 to 37.00
Mixed yard cast.	34.00 to 35.00
Stove plate	34.00 to 35.00
Small indus. malleable	22.50 to 23.50

Birmingham

No. 1 hvy. melting	$22.00
No. 2 hvy. melting	22.00
No. 2 bundles	20.00
No. 1 busheling	22.00
Machine shop turn.	$16.00 to 17.00
Shoveling turnings	17.00 to 18.00
Cast iron borings	17.00 to 18.00
Bar crops and plate	28.00
Structural and plate	28.00
No. 1 RR. hvy. melt.	23.00
Scrap rails, random lgth.	29.00 to 30.00
Rerolling rails	33.00 to 34.00
Rails 2 ft and under	34.00 to 35.00
Angles & splice bars	31.50 to 32.00
Std. steel axles	26.00 to 27.00
No. 1 cupola cast	33.50 to 34.00
Stove plate	28.00
Cast iron carwheels	23.00 to 24.00

St. Louis

No. 1 hvy. melting	$24.00 to $25.00
No. 2 hvy. melting	21.00 to 22.00
No. 2 bundled sheets	21.00 to 22.00
Machine shop turn.	14.00 to 16.00
Shoveling turnings	15.00 to 16.00
Rails, random lengths	29.00 to 30.00
Rails 3 ft and under	33.00 to 34.00
Locomotive tires, uncut	25.00 to 26.00
Angles and splice bars	33.00 to 34.00
Std. steel car axles	36.00 to 37.00
RR. spring steel	27.00 to 28.00
No. 1 machinery cast.	35.00 to 36.00
Hvy. breakable cast.	28.00 to 29.00
Cast iron brake shoes	28.00 to 29.00
Stove plate	33.00 to 34.00
Cast iron car wheels	35.00 to 36.00
Malleable	29.00 to 30.00

New York

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$17.50 to $18.50
No. 2 hvy. melting	16.00 to 17.00
No. 2 bundles	15.00 to 15.50
Machine shop turn.	9.50 to 10.00
Mixed bor. and turn.	8.50 to 9.50
Shoveling turnings	10.00 to 11.00
Clean cast chem. bor.	14.00 to 14.50
No. 1 machinery cast.	28.00 to 30.00
Mixed yard cast.	26.00 to 27.00
Charging box cast.	23.00 to 25.00
Heavy breakable cast.	23.00 to 25.00
Unstrp. motor blocks	21.00 to 22.00

Boston

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$16.00 to $17.00
No. 2 hvy. melting	14.00 to 15.00
No. 1 bundles	16.00 to 17.00
No. 2 bundles	$14.00 to $14.50
Machine shop turn.	8.00 to 8.50
Mixed and bor. turn.	8.00 to 8.50
Shoveling turnings	8.50 to 9.00
No. 2 busheling	10.00 to 11.00
Clean cast chem. borings	11.00 to 12.00
No. 1 machinery cast.	31.00 to 32.00
No. 2 machinery cast.	26.00 to 28.00
Heavy breakable cast.	18.50 to 19.00
Stove plate	20.50 to 21.50

Detroit

Brokers' buying prices per gross ton, on cars:

No. 1 hvy melting	$21.00 to $22.00
No. 2 hvy melting	18.00 to 19.00
No. 1 bundles	23.00 to 24.00
New busheling	21.00 to 22.00
Flashings	21.00 to 22.00
Machine shop turn.	11.50 to 12.00
Mixed bor. and turn.	11.50 to 12.00
Shoveling turnings	13.50 to 14.00
Cast iron borings	13.50 to 14.00
Low phos. plate	21.00 to 22.00
No. 1 cupola cast	32.00 to 33.00
Heavy breakable cast	27.00 to 28.00
Stove plate	24.00 to 26.00
Automotive cast	32.00 to 33.00

Cincinnati

Per gross ton, f.o.b. cars:

No. 1 hvy. melting	$22.50 to $23.00
No. 2 hvy. melting	19.50 to 20.00
No. 1 bundles	22.50 to 23.00
No. 2 bundles	17.50 to 18.00
Machine shop turn.	12.50 to 13.00
Mixed bor. and turn.	12.50 to 13.00
Shovelings turnings	14.50 to 15.00
Cast iron borings	14.50 to 15.00
Low phos. 18 in. under	29.50 to 30.00
Rails, random lengths	32.00 to 33.00
Rails, 18 in. and under	39.00 to 40.00
No. 1 cupola cast	34.00 to 35.00
Hvy. breakable cast	30.00 to 31.00
Drop broken cast	39.00 to 40.00

San Francisco

No. 1 hvy. melting	$17.00
No. 2 hvy. melting	16.00
No. 1 bundles	13.00
No. 2 bundles	13.00
No. 3 bundles	10.00
Machine shop turn	9.00
Elec. fur. 1 ft and under	25.00
No. 1 RR. hvy. melting	17.00
Scrap rails, random lgth.	17.00
No. 1 cupola cast	$20.00 to 25.00

Los Angeles

No. 1 hvy. melting	$20.00
No. 2 hvy. melting	18.00
No. 1 bundles	16.00
No. 2 bundles	16.00
No. 3 bundles	13.00
Mach. shop turn.	12.00
Elec. fur. 1 ft and under	30.00
No. 1 RR. hvy. melting	20.00
No. 1 cupola cast.	$30.00 to 31.00

Seattle

No. 1 hvy. melting	$16.00
No. 2 hvy. melting	16.00
No. 1 bundles	15.00
No. 2 bundles	15.00
No. 3 bundles	12.00
Elec. fur. 1 ft and under	21.00
RR. hvy. melting	19.00
No. 1 cupola cast	$20.00 to 27.00
Heavy breakable cast	20.00

Hamilton, Ont.

Cast grades f.o.b. shipping point:

No. 1 hvy. melting	$20.00
No. 1 bundles	20.00
No. 2 bundles	19.50
Mechanical bundles	18.00
Mixed steel scrap	16.00
Mixed bor. and turn.	14.00
Rails, remelting	20.00
Rails, rerolling	23.00
Bushelings	14.50
Bush., new fact, prep'd.	18.00
Bush., new fact, unprep'd.	13.00
Short steel turnings	14.00
Cast scrap	$33.00 to 35.00

HORSESHOES—THE BELLWETHER OF SCRAP

It was the theory of Thomas Blanchard, inventor and builder of the "Vermont", one of the early steamboats, that you could get "high tensile wrought iron" by forging discarded horseshoes. It was his thought that the iron had been "refined" through pounding over roads on hooves of horses. Vital parts of the engine—including the long connecting rods cranked to the axle stern wheel—were made of "high tensile wrought iron" forged out of discarded horseshoes collected from "village blacksmith shops". Although his theory was not valid, Blanchard did have the farsightedness to press into service iron which otherwise would have gone to waste.

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel: (cents per pound)	Sept. 6, 1949	Aug. 30, 1949	Aug. 9, 1949	Sept. 7, 1948
Hot-rolled sheets	3.25	3.25	3.25	3.26
Cold-rolled sheets	4.00	4.00	4.00	4.00
Galvanized sheets (10 ga)	4.40	4.40	4.40	4.40
Hot-rolled strip	3.25	3.25	3.25	3.265
Cold-rolled strip	4.038	4.038	4.038	4.063
Plates	3.40	3.40	3.40	3.42
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R strip (No. 302)	33.00	33.00	33.00	33.25
Tin and Terneplate: (dollars per base box)				
Tinplate (1.50 lb) cokes.	$7.75	$7.75	$7.75	$6.80
Tinplate, electro (0.50 lb)	6.70	6.70	6.70	6.00
Special coated mfg. ternes	6.65	6.65	6.65	5.90
Bars and Shapes: (cents per pound)				
Merchant bars	3.35	3.35	3.35	3.37
Cold-finished bars	3.995	3.995	3.995	3.995
Alloy bars	3.75	3.75	3.75	3.75
Structural shapes	3.25	3.25	3.25	3.25
Stainless bars (No. 302)	28.50	28.50	28.50	28.25
Wrought iron bars	9.50	9.50	9.50	9.50
Wire: (cents per pound)				
Bright wire	4.15	4.15	4.15	4.256
Rails: (dollars per 100 lb)				
Heavy rails	$3.20	$3.20	$3.20	$3.20
Light rails	3.55	3.55	3.55	3.55
Semifinished Steel: (dollars per net ton)				
Rerolling billets	$52.00	$52.00	$52.00	$52.00
Slabs, rerolling	52.00	52.00	52.00	52.00
Forging billets	61.00	61.00	61.00	61.00
Alloy blooms, billets, slabs	63.00	63.00	63.00	63.00
Wire rod and Skelp: (cents per pound)				
Wire rods	3.40	3.40	3.40	3.619
Skelp	3.25	3.25	3.25	3.25

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Pig Iron: (per gross ton)	Sept. 6, 1949	Aug. 30, 1949	Aug. 9, 1949	Sept. 7, 1948
No 2, foundry, Phila.	*$50.42*	$50.56	$50.56	$49.56
No. 2, Valley furnace	46.50	46.50	46.50	43.50
No. 2, Southern Cin'ti*	45.47	45.47	45.47	49.47
No. 2, Birmngham	39.38	39.38	39.38	43.38
No. 2, foundry, Chicago†	46.50	46.50	46.50	43.00
Basic del'd Philadelphia*	49.92	49.74	49.74	48.76
Basic, Valley furnace	46.00	46.00	46.00	43.00
Malleable, Chicago†	46.50	46.50	46.50	43.50
Malleable, Valley	46.50	46.50	46.50	43.50
Charcoal, Chicago	*68.56*	73.78	73.78	69.55
Ferromanganese‡	173.40	173.40	173.40	145.00

†The switching charge for delivery to foundries in the Chicago district is $1 per ton.
‡Average of U. S. prices quoted on Ferroalloy page.
*Does not include interim increase on total freight charges effective Jan. 11, 1949.

Scrap: (per gross ton)	Sept. 6, 1949	Aug. 30, 1949	Aug. 9, 1949	Sept. 7, 1948
Heavy melt'g steel, P'gh.	$24.75	$24.25	$21.00	$42.75
Heavy melt'g steel, Phila.	22.50	21.25	17.50	45.00
Heavy melt'g steel, Ch'go	24.50	24.50	21.50	41.75
No. 1 hy. comp. sh't Det.	23.50	21.50	14.75	38.00
Low phos. Young'n	29.75	27.25	20.75	47.75
No. 1, cast, Pittsburgh	36.50	36.50	27.50	65.00
No. 1, cast, Philadelphia	33.50	32.50	27.50	65.50
No. 1, cast, Chicago	41.50	41.50	39.50	72.00
Coke: Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.25	$14.25	$14.25	$15.00
Foundry coke, prompt	15.75	15.75	15.75	17.00
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.	17.625	17.625	17.625	23.50
Copper, Lake Conn.	17.75	17.75	17.75	23.625
Tin, Grade A, New York	$1.03	$1.03	$1.03	$1.03
Zinc, East St. Louis	10.25	10.00	10.00	15.00
Lead, St. Louis	14.925	14.925	14.80	19.30
Aluminum, virgin	17.00	17.00	17.00	16.00
Nickel electrolytic	42.93	42.93	42.93	42.90
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	38.50	38.50	38.50	35.00

Composite Prices

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

	Finished Steel Base Price	Pig Iron	Scrap Steel
Sept. 6, 1949	3.705¢ per lb.	*$45.88* per gross ton	$23.92 per gross ton
One week ago	3.705¢ per lb.	45.91 per gross ton	23.33 per gross ton
One month ago	3.705¢ per lb.	45.91 per gross ton	20.00 per gross ton
One year ago	3.720¢ per lb.	44.66 per gross ton	43.16 per gross ton

	Finished Steel High	Finished Steel Low	Pig Iron High	Pig Iron Low	Scrap Steel High	Scrap Steel Low
1949	3.720¢ Jan. 1	3.705¢ May 3	$46.82 Jan. 4	$45.91 May 10	$43.00 Jan. 1	$19.33 June 28
1948	3.721¢ July 27	3.193¢ Jan. 1	46.91 Oct. 12	39.58 Jan. 6	43.16 July 27	39.75 Mar. 9
1947	3.193¢ July 29	2.848¢ Jan. 1	37.98 Dec. 30	30.14 Jan. 7	42.58 Oct. 28	29.50 May 20
1946	2.848¢ Dec. 31	2.464¢ Jan. 1	30.14 Dec. 10	25.37 Jan. 1	31.17 Dec. 24	19.17 Jan. 1
1945	2.464¢ May 29	2.396¢ Jan. 1	25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May 22
1944	2.396¢	2.396¢	$23.61	$23.61	19.17 Jan. 11	15.76 Oct. 24
1943	2.396¢	2.396¢	23.61	23.61	$19.17	$19.17
1942	2.396¢	2.396¢	23.61	23.61	19.17	19.17
1941	2.396¢	2.396¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$19.17 Apr. 16
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr. 9
1939	2.35367¢ Jan. 3	2.26689¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May 16
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June 7
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	23.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June 9
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June 4
1935	2.07642¢ Oct. 1	2.06492¢ Jan. 8	18.84 Nov. 5	17.83 May 14	13.42 Dec. 10	10.33 Apr. 23
1934	2.15367¢ Apr. 24	1.95757¢ Jan. 2	17.90 May 1	16.90 Jan. 27	13.00 Mar. 13	9.50 Sept. 25
1933	1.95578¢ Oct. 3	1.75836¢ May 2	16.90 Dec. 5	13.56 Jan. 3	12.25 Aug. 8	6.75 Jan. 3
1932	1.89196¢ July 5	1.83901¢ Mar. 1	14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July 5
1931	1.99626¢ Jan. 13	1.86586¢ Dec. 29	15.90 Jan. 6	14.79 Dec. 15	11.33 Jan. 6	8.50 Dec. 29
1929	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec. 9

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipments. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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STEEL PRICES

PRODUCTS	Base prices at producing points apply to the sizes and grades produced in these areas														
	Pittsburgh	Chicago	Gary	Cleveland	Birmingham	Buffalo	Youngstown	Sparrows Point	Granite City	Middletown, Ohio		Detroit	Johnstown	Seattle, S. Frisco, LosAngeles	Fontana
INGOTS Carbon forging	$50.00											$50.00			
Alloy	$51.00						(per net ton)					$51.00			
BILLETS, BLOOMS, SLABS Carbon, rerolling [10]	$52.00				$52.00	$52.00	(per net ton)						$52.00		$71.00
Carbon forging billets	$61.00	$61.00	$61.00	$61.00	$61.00	$61.00	(per net ton)					$61.00	$61.00		$80.00
Alloy	$63.00	$63.00				$63.00	(Bethlehem, Canton, Massillon =$63.00) (per net ton)					$63.00			$82.00
PIPE SKELP	3.25						3.25				Warren =3.25				
WIRE RODS	3.40	3.40		3.40	3.40		3.40	3.50			Worcester 3.70		3.40	4.85[11] 4.20[12]	
SHEETS Hot-rolled [4]	3.25	3.25	3.25	3.25	3.25	3.25 (Conshohocken, Pa. 3.35)	3.25	3.25		Warren, Ashland =3.25		3.45		3.95[13]	4.15
Cold-rolled	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.20	4.00	Warren 4.00	4.20		Pittsburg, Cal.=4.95	4.90
Galvanized (10 gage)	4.40	4.40	4.40		4.40		Niles =4.40	4.40	Canton =4.40	4.40	Ashland =4.40			5.15[13]	
Enameling (12 gage)	4.40	4.40	4.40	4.40			4.40		4.60	4.40		4.70			
Long ternes (10 gage)	4.80		4.80							4.80					
STRIP Hot-rolled [3]	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25		3.25	Warren =3.25	3.45		4.00 to 4.25	4.40
Cold-rolled [2]	4.00	4.15		4.00		4.00	4.00	4.00		New Haven=4.50 Warren=4.00 to 4.25		4.20 to 4.25			4.90
TINPLATE Cokes, 1.50 lb.[3] base box	$7.75	$7.75	$7.75		$7.85			$7.85	$7.95	Warren, Ohio =$7.75				Pittsburg, Cal.=$8.50	
Electrolytic 0.25, 0.50, 0.75 lb. box	Deduct $1.30, $1.05 and 75¢ respectively from 1.50 lb. coke base box price														
TERNES MFG., special coated	Deduct $1.10 from 1.50 lb. coke base box price														
BLACKPLATE CANMAKING 55 to 128 lb.	Deduct $2.00 from 1.50 lb. coke base box price														
BLACKPLATE, h.s., 29 ga.[8]	5.30	5.30	5.30					5.40		Warren, Ohio =5.30					
BARS Carbon Steel	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35		3.35	Canton =3.35	3.55	3.35	4.05 to 4.10[14]	4.00
Reinforcing [5]	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35			Canton =3.35		3.35	4.05 to 4.10[14]	4.00
Cold-finished [6]	3.95 to 4.00	4.00	4.00	4.00		4.00	4.00					4.30			
Alloy, hot-rolled	3.75	3.75	3.75			3.75	3.75	Bethlehem, Canton, Massillon=3.75				4.05	3.75	4.80[12]	4.75
Alloy cold-drawn	4.65	4.65	4.65	4.65		4.65	4.65	Massillon=4.65			Worcester 4.95				
PLATE Carbon steel [9]	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40 Coatesville=3.50, Claymont=3.50 Geneva=3.40, Harrisburg=3.50				3.65	3.40	4.30[14]	4.00
					Conshohocken=3.50										
Floor plates	4.55	4.55		4.55				Conshohocken, Harrisburg =4.55							
Alloy	4.40	4.40	4.40						Coatesville=4.50						
SHAPES, Structural	3.25	3.25	3.25		3.25	3.30	Bethlehem=3.30, Geneva, Utah=3.25						3.30	3.80 to 3.90[14]	3.80
MANUFACTURERS' WIRE [7] Bright	4.15	4.15		4.15	4.15		4.15	4.25	Duluth=4.15, Worcester=4.45				4.15	5.15[11]	
Spring (high carbon)	5.20	5.20		5.20				5.30	Worcester=5.50 New Haven, Trenton=5.50				5.20	Duluth= 5.20-6.15	
PILING, Steel sheet	4.05	4.05				4.05									

Steel prices shown above are f.o.b. producing points in cents per pound unless otherwise indicated. Extras apply. (1) Widths up to 12-in. inclusive. (2) 0.25 carbon and less. (3) Cokes, 1.25 lb. deduct 25¢ per base box. (4) 18 gage and heavier. (5) For straight length material only from producers to fabricators. (6) Also shafting. For quantities of 40,000 lb and over. (7) Carload lot in manufacturing trade. (8) Hollowware enameling gages 29 to 31 only. (9) Produced to dimensional tolerances in AISI Manual Sec. 6. (10) Slab prices subject to negotiation in most cases. (11) San Francisco only. (12) Los Angeles only. (13) San Francisco and Los Angeles only. (14) Seattle only. (15) Seattle and Los Angeles only.

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PIPE AND TUBING

Base discounts, f.o.b. mills, Base price, about $200.00 per net ton.

Standard, Threaded and Coupled

Steel, buttweld*	Black	Galv.
⅛-in.	43 to 41	26½ to 24½
¼-in.	46 to 44	30½ to 28½
1-in.	48½ to 46½	33½ to 31½
1¼-in.	49 to 47	34 to 32
1½-in.	49½ to 47½	34½ to 32½
2-in.	50 to 48	35 to 33
2½ to 3-in.	50½ to 48½	35½ to 33½
Steel, lapweld		
2-in.	39½	26 to 24
2½ to 3-in.	43½ to 42½	28 to 27
3½ to 6-in.	46½ to 42½	31 to 27
Steel, seamless		
2-in.	38½ to 27	23 to 11½
2½ to 3-in.	41½ to 32½	26 to 17
3½ to 6-in.	43½ to 38½	28 to 23
Wrought Iron, buttweld		
⅛-in.	+20½	+47
¼-in.	+10½	+36
1 & 1¼ in.	+ 4½	+27
2-in.	— 1½	+23½
3-in.	— 2	+23
Wrought Iron, lapweld		
2-in.	+ 7½	+31
2½ to 3½-in.	+ 5	+26½
4-in.	list	+20½
4½ to 8-in.	+ 2	+22

Extra Strong, Plain Ends

Steel, buttweld				
½-in.	42	to 40	27	to 25
¾-in.	46	to 44	31	to 29
1-in.	48	to 46	34	to 32
1¼-in.	48½	to 46½	34½	to 32½
1½-in.	49	to 47	35	to 33
2-in.	49½	to 47½	35½	to 34½
2½ to 3-in.	50	to 48	36	to 34
Steel, lapweld				
2-in.	39½	to 38½	25	to 24
2½ to 3-in.	44½	to 42½	30	to 28
3½ to 6-in.	48	to 44	33½	to 31½
Steel, seamless				
2-in.	37½	to 32½	23	to 18
2½ to 3-in.	41½	to 36½	27	to 23
3½ to 6-in.		45		30½
Wrought Iron, buttweld				
½-in.		+16		+40
¾-in.		+ 9½		+34
1 to 2-in.		— 1½		+23
Wrought Iron, lapweld				
2-in.		+ 4½		+27½
2½ to 4-in.		— 5		+16
4½ to 6-in.		— 1		+20½

For threads only, buttweld, lapweld and seamless pipe, one point higher discount (lower price) applies. For plain ends, buttweld, lapweld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lapweld and seamless 3½-in. and larger four points higher discount (lower price) applies. On buttweld and lapweld steel pipe, jobbers are granted a discount of 5 pct. *Fontana, Calif., deduct 11 points from figures in left columns.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Prices per 100 ft at mill in carload lots, cut length 4 to 24 ft inclusive.

OD in.	Gage BWG	Seamless H.R.	Seamless C.R.	Electric H.R.	Weld C.D.
2	13	$19.18	$22.56	$18.60	$21.89
2½	12	25.79	30.33	25.02	29.41
3	12	28.68	33.76	27.82	32.74
3½	11	35.85	42.20	34.78	40.94
4	10	44.51	52.35	43.17	50.78

CAST IRON WATER PIPE

Per net ton

6 to 24-in., del'd Chicago $95.70
6 to 24-in., del'd N. Y. ..... $92.50 to 97.40
6 to 24-in., Birmingham 82.50
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less 109.30
Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

BOLTS, NUTS, RIVETS, SET SCREWS

Consumer Prices

(Bolts and nuts f.o.b. mill Pittsburgh, Cleveland, Birmingham or Chicago)

Base discount less case lots

Machine and Carriage Bolts

	Pct Off List
½ in. & smaller x 6 in. & shorter	35
9/16 & ⅝ in. x 6 in. & shorter	37
¾ in. & larger x 6 in. shorter	34
All diam., longer than 6 in.	30
Lag, all diam over 6 in. longer	35
Lag, all diam x 6 in. & shorter	37
Plow bolts	47

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller	35
9/16 to 1 in. inclusive	34
1⅛ to 1½ in. inclusive	32
1⅝ in. and larger	27

On above bolts and nuts, excepting plow bolts, additional allowances of 15 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

Semifinished Hexagon Nuts

	USS	SAE
7/16 in. and smaller	..	41
½ in. and smaller	38	..
½ in. through 1 in.	..	39
9/16 in. through 1 in.	37	..
1⅛ in. through 1½ in.	35	37
1⅝ in. and larger	28	..

In full case lots, 15 pct additional discount.

Stove Bolts

Packages, nuts separate	$61.75
In bulk	70.00

Large Rivets

(½ in. and larger)

	Base per 100 lb
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	$6.75
F.o.b. Lebanon, Pa.	6.75

Small Rivets

(7/16 in. and smaller)

	Pct off List
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	48

Cap and Set Screws

(In packages)	Pct Off List
Hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in., SAE 1020, bright	46
¾ to 1 in. x 6 in., SAE (1035), heat treated	35
Milled studs	19
Flat head cap screws, listed sizes	5
Fillister head cap, listed sizes	28

FLUORSPAR

Washed gravel fluorspar, f.o.b. cars, Rosiclare, Ill.

	Base price per net ton
Effective CaF, Content:	
70% or more	$37.00
60% or less	34.00

LAKE SUPERIOR ORES

(51.50% Fe, Natural Content, Delivered Lower Lake Ports)

	Per gross ton
Old range, bessemer	$7.60
Old range, nonbessemer	7.45
Mesabi, bessemer	7.35
Mesabi, nonbessemer	7.20
High phosphorus	7.20

After Dec. 31, 1948, increases or decreases in Upper Lake freight, dock and handling charges and taxes thereon to be for the buyers' account.

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.l.f. New York, ocean bags	7.9¢ to 9.0¢
Domestic sponge iron, 98+% Fe, carload lots	9.0¢ to 15.0¢
Electrolytic iron, annealed, 99.5+% Fe	31.5¢ to 39.5¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	48.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 microns, 98%, 99.8%+ Fe	90.0¢ to $1.75
Aluminum	27.00¢
Antimony	53.73¢
Brass, 10 ton lots	23.00 to 25.25¢
Copper, electrolytic	27.75¢
Copper, reduced	27.625¢
Cadmium	$2.40
Chromium, electrolytic, 99% min.	$3.50
Lead	21.49¢
Manganese	48.00¢
Molybdenum, 99%	$2.65
Nickel, unannealed	66.00¢
Nickel, spherical, minus 30 mesh, unannealed	68.00¢
Silicon	34.00¢
Solder powder	8.5¢ plus metal cost
Stainless steel, 302	75.00¢
Tin	$1.15 to $1.25
Tungsten, 99%	$2.90
Zinc, 10 ton lots	15.25 to 18.00¢

COKE

	Net Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa.	$14.00 to $14.50
Foundry, beehive (f.o.b. oven) Connellsville, Pa.	$15.50 to $16.00
Foundry, oven coke	
Buffalo, del'd	$20.90
Chicago, f.o.b.	20.40
Detroit, f.o.b.	19.40
New England, del'd	22.70
Seaboard, N. J., f.o.b.	22.00
Philadelphia, f.o.b.	20.45
Swedeland, Pa., f.o.b.	20.40
Plainesville, Ohio, f.o.b.	20.90
Erie, del'd	$20.25 to 21.04
Cleveland, del'd	22.62
Cincinnati, del'd	21.71
St. Paul, f.o.b.	23.50
St. Louis, del'd.	21.60
Birmingham, del'd	18.75

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick

Carloads, Per 1000

First quality, Pa., Ky., Mo., Ill. (except Salina, Pa., add $5)	$80.00
No. 1 Ohio	74.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	74.00
No. 2 Ohio	66.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)	11.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$80.00
Childs, Pa.	84.00
Hays, Pa.	85.00
Chicago District	89.00
Western, Utah and Calif.	95.00
Super Duty, Hays, Pa., Athens, Tex.	$85.00 to 95.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	$13.75 to 14.00
Silica cement, net ton, bulk, Hays, Pa.	16.00
Silica cement, net ton, bulk, Ensley, Ala.	15.00
Silica cement, net ton, bulk, Chicago District	$14.75 to 15.00
Silica cement, net ton, bulk, Utah and Calif.	21.00

Chrome Brick

Per Net Ton

Standard chemically bonded, Balt., Chester	$69.00

Magnesite Brick

Standard, Balt. and Chester	$91.00
Chemically bonded, Balt. and Chester	80.00

Grain Magnesite

Std. ⅜-in. grains

Domestic, f.o.b. Balt. and Chester, in bulk, fines removed	$56.00 to 56.50
Domestic, f.o.b. Chewelah, Wash., in bulk with fines	$30.50 to 31.00
in sacks with fines	35.00 to 35.50

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk, Midwest, add 10¢: Missouri Valley, add 20¢ .. $12.25

STAINLESS STEELS

Base prices, in cents per pound, f.o.b. producing point

Product	Chromium Nickel							Straight Chromium		
	301	302	303	304	316	321	347	410	416	430
Ingots, rerolling	12.75	13.50	15.00	15.50	22.75	18.25	20.00	11.25	13.75	11.50
Slabs, billets, rerolling	17.00	18.25	20.25	19.25	30.25	24.50	26.75	15.00	18.50	15.25
Forg. discs, die blocks, rings	30.50	30.50	33.00	32.00	49.00	36.50	41.00	24.50	25.00	25.00
Billets, forging	24.25	24.25	26.25	25.50	39.00	29.00	32.75	19.50	20.00	30.00
Bars, wire, structurals	28.50	28.50	31.00	30.00	46.00	34.00	38.50	23.00	23.50	23.50
Plates	32.00	32.00	34.00	34.00	50.50	39.50	44.00	26.00	26.50–27.00	26.50
Sheets	37.50	37.50	39.50	39.50	53.00	45.50	50.00	33.00	33.50	35.50
Strip, hot-rolled	24.25	25.75	30.00	27.75	46.00	34.50	38.75	21.25	28.00	21.75
Strip, cold-rolled	30.50	33.00	36.50	35.00	55.00	44.50	48.50	27.00	33.50	27.50

ELECTRODES

Cents per lb. f.o.b. plant, threaded electrodes with nipples, unboxed

Diameter in in.	Length in in.	
Graphite		
17, 18, 20	60, 72	16.00¢
8 to 16	48, 60, 72	16.50¢
7	48, 60	17.75¢
6	48, 60	19.00¢
4, 5	40	19.50¢
3	40	20.50¢
2½	24, 30	21.00¢
2	24, 30	23.00¢
Carbon		
40	100, 110	7.50¢
35	65, 110	7.50¢
30	65, 84, 110	7.50¢
24	72 to 104	7.50¢
17 to 20	84, 90	7.50¢
14	60, 72	8.00¢
10, 12	60	8.25¢
8	60	8.50¢

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	90.5¢
18	4	1	—	5	$1.42
18	4	2	—	—	$1.025
1.5	4	1.5	8	—	65¢
6	4	2	6	—	69.5¢

High-carbon-chromium	52¢
Oil hardened manganese	29¢
Special carbon	26.5¢
Extra carbon	22¢
Regular carbon	19¢

Warehouse prices on and east of Mississippi are 2½¢ per lb higher. West of Mississippi, 4½¢ higher.

ELECTRICAL SHEETS

24 gage, HR cut lengths, f.o.b. mill

	Cents per lb
Armature	5.45
Electrical	5.95
Motor	6.70
Dynamo	7.50
Transformer 72	8.05
Transformer 65	8.60
Transformer 58	9.30
Transformer 52	10.10

RAILS, TRACK SUPPLIES

F.o.b. mill

Standard rails, 100 lb and heavier, No. 1 quality, per 100 lb	$3.20
Joint bars, 100 lb	4.25
Light rails per 100 lb	3.55

	Base Price cents per lb
Track spikes	5.35
Axles	5.20
Screw spikes	8.00
Tie plates	4.05
Tie plates, Pittsburg, Calif.*	4.20
Track bolts, untreated	8.25
Track bolts, heat treated, to railroads	8.50

*Seattle, add 30¢.

C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon	4.00¢
0.41 to 0.60 carbon	5.50¢
0.61 to 0.80 carbon	6.10¢
0.81 to 1.05 carbon	8.05¢
1.06 to 1.35 carbon	10.35¢

Worcester, add 0.30¢.

CLAD STEEL

Base prices, cents per pound, f.o.b. mill

Stainless-carbon	Plate	Sheet
No. 304, 20 pct,		
Coatesville, Pa.	*26.50	
Washington, Pa.	*26.50	*22.50
Claymont, Del.	*26.50	
Conshohocken, Pa.		*22.50
Nickel-carbon		
10 pct, Coatesville	27.50	
Inconel-carbon		
10 pct Coatesville	36.00	
Monel-carbon		
10 pct, Coatesville	29.00	
No. 302 Stainless-copper-stainless, Carnegie, Pa.		75.00
Aluminized steel sheets		
Hot dip, Butler, Pa.		7.75

* Includes annealing and pickling, or sandblasting.

MERCHANT WIRE PRODUCTS

To the dealer, f.o.b. mill

	Base Columa	*Pittsburg, Calif.*
Standard & coated nails*	103	122
Galvanized nails*	103	122
Woven wire fence†	109	132
Fence posts, carloads††	112	...
Single loop bale ties	106	130
Galvanized barbed wire**	123	143
Twisted barbless wire	123	...

* Pgh., Chi., Duluth; Worcester, 6 columns higher. † 15½ gage and heavier. ** On 80 rod spools, in carloads. †† Duluth, Joliet and Johnstown.

	Base per 100 lb	*Pittsburg, Calif.*
Annealed fence wire‡	$4.80	$5.75
Annealed, galv. fencing‡	5.25	6.20
Cut nails, carloads‡‡	6.75	...

‡ Add 30¢ at Worcester; 10¢ at Sparrows Pt.

‡‡ Less 20¢ to jobbers.

HIGH STRENGTH, LOW ALLOY STEELS

Mill base prices, cents per pound

Steel	Aldecor	Corten	Double Strength No. 1	Dynalloy	HI Steel	Kaisalloy	Mayari R	NAX High Tensile	Otisco loy	Yoloy
Producer	Republic	Carnegie-Illinois, Republic Sharon*	Republic	Alan Wood	Inland	Kaiser	Bethlehem	Great Lakes Sharon*	Jones & Laughlin	Youngstown Sheet & Tube
Plates	5.20	5.20	5.20	5.20	5.20	5.80	5.20	5.45	5.20	5.20
Sheets										
Hot-rolled	4.95	4.95	4.95	4.95	4.95	6.64	4.95	5.15	4.95	4.95
Cold-rolled	6.05	6.05	6.05	.....	6.05	8.95	6.05	6.25	6.05	6.05
Galvanized	.....	6.75	.....	.....	.....	.....	6.75	.....	.....	.....
Strip										
Hot-rolled	4.95	4.95	4.95	.....	4.95	6.64	4.95	5.15	4.95	4.95
Cold-rolled	.....	.....	6.05	.....	.....	6.95	6.05	6.25	6.05	6.05
Shapes	.....	4.95	.....	.....	4.95	6.10	5.05	.....	4.95	4.95
Bars										
Hot-rolled	5.10	5.10	5.10	.....	5.10	6.15	5.10	5.30	5.10	5.10
Bar shapes	.....	5.10	.....	.....	5.10	6.15	5.10	.....	5.10	5.10

* Sheets and strip.

UNIVERSITY OF MICHIGAN LIBRARIES

WAREHOUSE PRICES

Base prices, f.o.b. warehouse, dollars per 100 lb. (Metropolitan area delivery, add 15c to base price except Cincinnati and New Orleans (*), add 10c; New York, add 20c.)

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS			ALLOY BARS		
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140-50 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140-50 Ann.
Baltimore	5.31	6.21–6.41	6.96–7.11	5.37	....	5.56	5.36	5.42	6.16	....	9.60–10.10	....	....
Birmingham	5.00	....	6.40	5.00	....	5.15	5.00	5.10	6.57	....	....	....	....
Boston	5.55	6.45–6.75	7.11–7.61	5.60–5.95	6.75	5.00	5.42	5.52	6.27	9.67–9.79	10.84–10.97	11.23	11.47
Buffalo	4.85	5.75	7.42–7.57	5.24	7.27	5.35	5.08	4.95	5.40	9.38	9.60	10.85	10.95
Chicago	4.85	5.75	6.85	4.85	5.45–6.15	5.10	4.90	4.90	5.40	8.99	9.26	10.25	10.35
Cincinnati*	5.16–5.51	5.84–6.26	6.89–6.93	5.28–5.43	....	5.53–5.85	5.33	5.33–5.48	6.06–6.26	9.74	9.99	11.19	11.44
Cleveland	4.85	5.75	6.70	5.03	....	5.21	5.01	5.01	5.46	9.06	9.35	10.49	10.70
Detroit	5.28–5.32	6.07–6.18	7.38–7.58	5.27–5.47	6.27–6.58	5.52–5.57	5.33–5.40	5.33–5.55	6.09–6.18	9.67	9.92	11.11	11.35
Houston	6.70–6.95	....	7.30	6.70	....	6.70	6.20–6.70	6.40–6.65	7.09	10.45	10.40	11.45	11.70
Indianapolis	5.29	6.13	7.44	5.29	7.36	5.54	5.34	5.34	6.14	11.26	11.39	....	....
Kansas City	5.45	6.35	7.40–7.45	5.45	6.05–6.90[5]	5.70	5.50	5.50	6.05	9.50	8.30	10.65	9.65
Los Angeles	6.45	7.90	7.45	6.65	7.35[20]	6.15	5.95	6.10	7.95[14]	10.95[15]	10.90[15]	12.45[15]	12.70[15]
Memphis	5.75–5.80	6.60	7.20	5.80–5.95	6.80	5.95–6.00	5.75	5.75	6.53	....	....	....	....
Milwaukee	5.03	5.93	7.02	5.03–5.38	6.32	5.28	5.08	5.08	5.63	9.53	9.73	10.98	11.23
New Orleans*	5.95	6.75	....	6.15	....	6.18	5.95	5.95	6.65[5]	....	....	....	....
New York	5.40	6.31	6.85–6.90	5.62	6.76	5.65	5.33	5.57	6.31	9.28	9.58	10.63	10.93
Norfolk	6.00	....	....	6.20	....	6.05	6.05	6.05	7.85	....	....	....	....
Omaha	6.13	....	8.33	6.13	....	6.38	6.18	6.18	6.98	....	....	....	....
Philadelphia	5.05	6.24[13]	6.58	5.40	6.29	5.35	5.16	5.46	5.94	9.05	9.35	10.82	10.87
Pittsburgh	4.85	5.75	6.90	5.00	6.00	5.05	4.90	4.90	5.40	8.90	9.20	10.25	10.35
Portland	6.50[5]–7.05	8.09	8.80–9.10	6.85[5]	....	8.30[5]	6.35[5]	6.35[5]	8.25[14]	10.50[6]	10.10[6]	....	....
Salt Lake City	7.05	7.05	8.65–8.65	7.45[3]	....	5.65[3]	5.50[3]	7.10[6]	8.15	....	....	....	....
San Francisco	6.15[5]	7.50[2]	7.80	6.75[5]	8.25[5]	6.35[5]	5.90[5]	5.90[5]	7.55	10.90[15]	10.85[15]	12.40[15]	12.65[15]
Seattle	6.70[4]–7.10	8.15[2]–8.65	8.80–9.30	6.70[4]	....	6.35[4]	6.30[4]	6.20[4]	8.15[14]	....	10.35[15]	....	13.10[15]
St. Louis	5.22–5.37	6.12–6.27	7.32	5.22	6.68–7.54	5.47	5.27	5.27	5.82	9.27–9.72	9.57–9.97	10.82–11.17	10.92–11.42
St. Paul	5.44	6.19–6.34	7.54–7.64	5.44	6.82	5.64–6.69	5.49	5.49	6.04	9.49	9.79	10.84	11.14

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED:
Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-ROLLED:
Sheets, 400 to 1499 lb strip, extras on all quantities. Bars 1000 lb and over.

ALLOY BARS:
1000 to 1999 lb.

GALVANIZED SHEETS:
450 to 1499 lb.

EXCEPTIONS:
(1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 lb and over; (6) 1000 lb and over; (7) 400 to 14,999 lb; (8) 400 lb and over; (9) 500 to 1999 lb; (10) 500 to 999 lb; (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 4999 lb; (16) 4000 lb and over; (17) up to 1999 lb; (18) 1000 to 1499 lb; (19) 1500 to 3499 lb; (20) 6000 lb and over.

PIG IRON PRICES

Dollars per gross ton. Delivered prices do not include 3 pct tax on freight.

PRODUCING POINT PRICES

Producing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	48.00	48.50	49.00	49.50	.....
Birmingham	38.88	39.38	....	....	.....
Buffalo	48.00	48.50	47.00	.....	.....
Chicago	48.00	48.50	48.50	47.00	.....
Cleveland	48.00	48.50	48.50	47.00	51.00
Duluth	48.00	48.50	48.50	47.00	.....
Erie	48.00	48.50	48.50	47.00	.....
Everett	.....	50.00	50.50	.....	.....
Granite City	47.90	48.40	48.90	.....	.....
Ironton, Utah	48.00	48.50	.....	.....	.....
Lone Star, Texas	48.00	48.50†	.....	.....	.....
Neville Island	48.00	48.50	48.50	.....	.....
Geneva, Utah	48.00	48.50	.....	.....	.....
Sharpsville	48.00	48.50	48.50	47.00	.....
Steelton	48.00	48.50	49.00	49.50	54.00
Struthers, Ohio	48.00	.....	.....	.....	.....
Swedeland	48.00	48.50	49.00	49.50	.....
Toledo	48.00	48.50	48.50	47.00	.....
Troy, N. Y.	48.00	48.50	49.00	.....	54.00
Youngstown	48.00	48.50	48.50	47.00	.....

DELIVERED PRICES (BASE GRADES)

Consuming Point	Producing Point	Rail Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Boston	Everett	$0.50 Arb.	.....	50.00	50.50	.....	.....
Boston	Steelton	6.90	.....	.....	.....	.....	60.90
Brooklyn	Bethlehem	4.29	.....	52.79	53.29	53.79	.....
Cincinnati	Birmingham	6.70	45.58	46.08	.....	.....	.....
Jersey City	Bethlehem	2.63	.....	51.13	51.63	52.13	.....
Los Angeles	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
Mansfield	Cleveland-Toledo	3.33	49.33	49.83	49.83	50.33	54.33
Philadelphia	Bethlehem	2.39	50.39	50.89	51.39	51.89	.....
Philadelphia	Swedeland	1.44	49.44	49.94	50.44	50.94	.....
Philadelphia	Steelton	3.09	.....	.....	.....	.....	57.09
San Francisco	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
Seattle	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
St. Louis	Granite City	0.75 Arb.	48.65	49.15	49.65	.....	.....
Gulf Ports	Lone Star, Texas	.....	50.50	51.00†	.....	.....	.....

† Low Phos., Southern Grade.

Producing point prices are subject to switching charges; silicon differential (not to exceed 50c per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct for foundry iron); phosphorus differentials, a reduction of 25c per ton for phosphorus content of 0.70 pct and over manganese differentials, a charge not to exceed 50c per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.01 to 6.50 pct. C/L per g.t., f.o.b. Jackson, Ohio—$59.50; f.o.b. Buffalo, $60.75. Add $1.00 per ton for each additional 0.50 pct Si up to 17 pct. Add 50c per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0.75 pct or more P. Bessemer ferrosilicon prices are $1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorus $60.00 per gross ton, f.o.b. Lyle, Tenn. Delivered Chicago, $68.56. High phosphorus charcoal pig iron is not being produced.

Ferromanganese

78-82% Mn, Maximum contract base price, gross ton, lump size.

F.o.b. Birmingham	$174
F.o.b. Niagara Falls, Alloy, W. Va., Welland, Ont.	$172
F.o.b. Johnstown, Pa.	$174
F.o.b. Sheridan, Pa.	$172
F.o.b. Etna, Pa.	$175

$2.00 for each 1% above 82% Mn, penalty, $2.15 for each 1% below 78%.

Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk	10.45
Ton lots	12.05
Less ton lots	12.95

Spiegeleisen

Contract prices gross ton, lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Palmerton, Pa.	$64.00	$65.00
Pgh. or Chicago	65.00	66.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.

Carload, packed	35.5
Ton lots	37.0

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	28
Ton lots	30
Less ton lots	32

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, delivered.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	25.25	27.10	28.30
0.10% max. C	24.75	26.60	27.80
0.15% max. C	24.25	26.10	27.30
0.30% max. C	23.75	25.60	26.80
0.50% max. C	23.25	25.10	26.30
0.75% max. C, 7.00% max. Si	20.25	22.10	23.30

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.

Carload bulk	8.95
Ton lots	10.60
Briquet, contract basis carlots, bulk delivered, per lb of briquet	10.30
Ton lots	11.90
Less ton lots	12.80

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $77.00 gross ton, freight allowed to normal trade area; Si 15.01 to 15.50 pct, f.o.b Niagara Falls, N. Y., $73.50. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe	20.70
97% Si, 1% Fe	21.10

Silicon Briquets

Contract price, cents per pound of briquet, bulk, delivered, 40% Si, 1 lb Si briquets.

Carload, bulk	6.30
Ton lots	7.90
Less ton lots	8.80

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size, bulk, in carloads, delivered.

25% Si	18.50
50% Si	11.30
75% Si	13.50
85% Si	14.65
90-95% Si	16.50

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered. (65-72% Cr, 2% max. Si)

0.06% C	28.75
0.10% C	28.25
0.15% C	28.00
0.20% C	27.75
0.50% C	27.50
1.00% C	27.25
2.00% C	27.00
65-69% Cr, 4-9% C	20.50
62-66% Cr, 4-6% C, 6-9% Si	21.35

Briquets — Contract price, cents per pound of briquet, delivered, 60% chromium.

Carload bulk	13.75
Ton lots	15.25
Less ton lots	16.15

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

Chromium Metal

Contract prices, cents per lb chromium contained packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

0.20% max. C	1.09
0.50% max. C	1.05
9.00% min. C	1.04

Calcium-Silicon

Contract price per lb of alloy, lump, delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.

Carloads	17.90
Ton lots	21.00
Less ton lots	22.50

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	19.25
Ton lots	21.55
Less ton lots	22.55

CMSZ

Contract price, cents per pound of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	19.75
Less ton lots	21.00

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	15.75¢
Less ton lots	17.00¢

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11% Ca 5 to 7%.

Carload packed	17.00¢
Ton lots to carload packed	18.00¢
Less ton lots	19.50¢

SMZ

Contract price, cents per pound of alloy, delivered. 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.25
Less ton lots	18.50

Other Ferroalloys

Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered	$2.35
Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained, V.	
Openhearth	$2.30
Crucible	3.00
High speed steel (Primos)	3.10
Vanadium pentoxide, 88-92% V_2O_5 contract basis, per pound contained V_2O_5	$1.31
Ferrocolumbium, 50-60% contract basis, delivered, per pound contained Cb.	
Ton lots	$2.10
Less ton lots	2.25
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo.	$1.10
Calcium molybdate, 45-50%, f.o.b. Langeloth, Pa., per pound contained Mo.	94¢
Molybdenum oxide briquets, f.o.b. Langeloth, Pa.; bags, f.o.b. Wash., Pa., per pound contained Mo.	95¢
Ferrotitanium, 40%, regular grade, 10% C max., f.o.b. Niagara Falls, N. Y., freight allowed east of Mississippi and north of Baltimore, ton lots, per lb contained Ti	$1.31
Ferrotitanium, 25%, low carbon, f.o.b. Niagara Falls, N.Y., freight allowed east of Mississippi and north of Baltimore, ton lots, per lb contained Ti	$1.40
Less ton lots	1.45
Ferrotitanium, 15 to 19%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed east of Mississippi and north of Baltimore, carloads per net ton	$160.00
Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton	$65.00
10 tons to less carload	75.00
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Ton lots	21.00¢
Zirconium, 12-15%, contract basis, lump, delivered, per pound of alloy.	
Carload, bulk	6.60¢
Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	7.40¢
Ton lots	8.80¢
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Carload, bulk, lump	11.00¢
Ton lots, bulk, lump	11.50¢
Ton lots, packed, lump	11.75¢
Less ton lots, lump	12.25¢

Boron Agents

Contract prices, per lb of alloy, del.

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lot	$1.30
F.o.b. Wash., Pa.: 100 lb and over	
10 to 14% B.	.75
14 to 19% B.	1.30
19% min. B.	1.50
Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, delivered.	
Ton lots	$1.67
Less ton lots	1.70
Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.	
Less ton lots	$1.80
Silcaz, contract basis, delivered	
Ton lots	45.00¢
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.	
No. 1	95¢
No. 6	61¢
No. 79	45¢
Bortam, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Carbortam, f.o.b. Suspension Bridge, N. Y.; freight allowed, Ti 15-18%, B 1.00-1.50%, Si 2.5-3.0%, Al 1.0-2.0%.	
Ton lots, per pound	8.65¢
Borosil, f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B	$4.25

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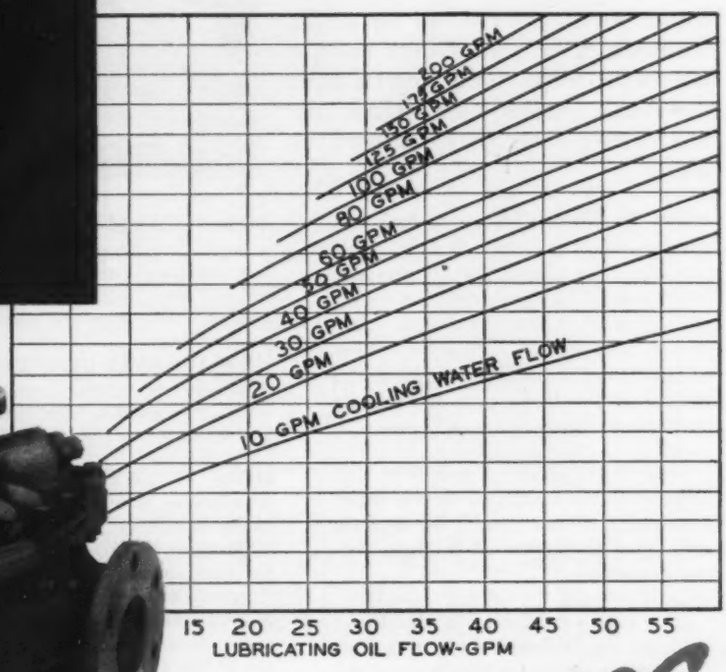
HARRISON OIL COOLERS



Control Temperatures TO DO 3 JOBS FOR YOU

1. **Increase Machine Productivity**
2. **Reduce Machine Maintenance**
3. **Extend Machine Life**

HARRISON

HARRISON RADIATOR DIVISION, GENERAL MOTORS CORPORATION, LOCKPORT, N. Y.

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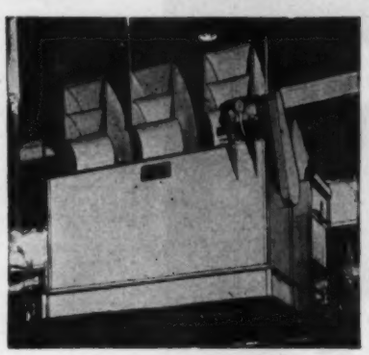
New HIGH PRESSURE STEAM Fan Heater

Gives Savings You Never Had Before

The first heater to make High Pressure Steam really trouble-free and practical in plant heating. Every engineer should understand its original method; write for Niagara Bulletin and performance data.



HOW IT OPERATES: — A dual coil system makes use of all heat, both sensible and latent. High pressure steam enters the upper coil, shown on the diagram below. Its condensate drains into a trap. Then this high pressure condensate is released into the header of the lower coil. It instantly flashes into steam at vapor pressure.

Any high pressure condensate that remains liquid is carried to the vapor condensate return header by a drain tube that also gives off its heat into the air stream.

The vapor condenses in the lower coil. Its condensate is kept at a high level in the return leg by a wier in the return header so that all its heat is made useful and it is sub-cooled by contact with the coldest air entering the heater. Vacuum condensate return to boiler is vapor free.

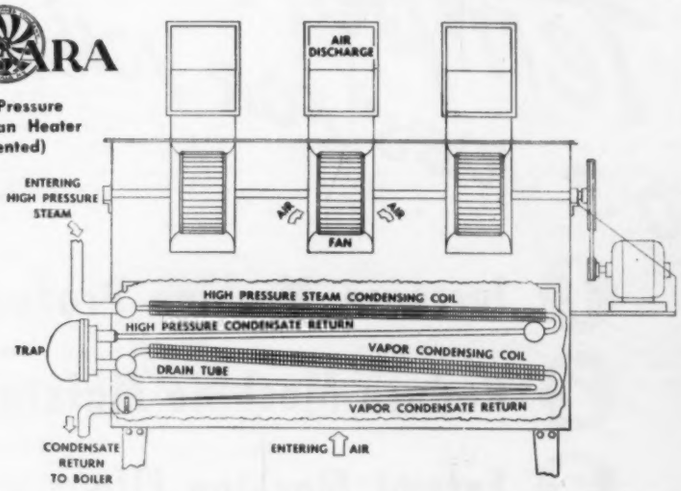
HOW IT SAVES IN COST: — Piping is much simpler and less costly than in low pressure systems. Much secondary piping, traps and big valves are not needed. Pipe sizes are smaller.

HOW IT SAVES IN OPERATION: — Waste is prevented. Every BTU goes where you want it. No dump traps or hot wells waste live steam.

HOW IT SAVES IN UPKEEP: — Condensate flow is even, vapor free, easily handled. No sudden surges of condensate in starting. No hammering, no hard wear and tear on system. Properly engineered for the job, final air temperatures are not excessive; heat easily directed where needed; no flashing of low pressure condensate. Heaters are self-draining on shut-down. Heaters are strongly built; all coils including the condensate drain tubes are hairpin bend, stress relieving. Use thru four heating seasons has proven these advantages in large scale plant heating.

NIAGARA

High Pressure Steam Fan Heater (Patented)



NIAGARA BLOWER COMPANY

Dept. IA, 405 LEXINGTON AVE., NEW YORK 17, N. Y.

Please send Bulletin 109 on the Niagara High Pressure Steam Fan Heater.

Name .....

Address .....

NEW

PRODUCTION IDEAS

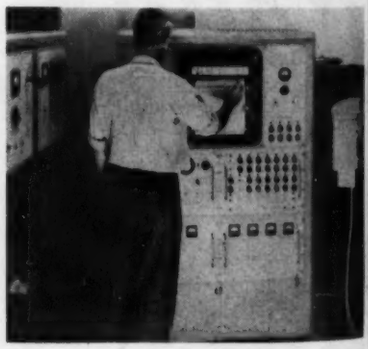
Continued from Page 124

piece of rolled stock or tubing in the fixture and presses the start button. As the fixture revolves, a

shoe is forced against the stock by an air cylinder, forming the strip to the external contour of the fixture. The machine stops automatically. Automobile window moldings at the rate of 180 per hr are formed on the machine illustrated. *Hancock Tool & Die Corp. For more information, check No. 38 on the postcard on p. 37.*

Spectrochemical Analysis

A direct reading spectrochemical method of analysis for stainless and tool steels is said to be equiva-



lent in accuracy to routine chemical methods. The total time of analysis for all metallic elements is 2 to 3 min, including sample preparation. Duplicate analysis on a single sample can be made in 3 to 4 min. Repeated analyses, each performed with a single sparking, on

WORTH

FLANGED AND DISHED HEADS

Flanged Only, Flanged and Dished (A.S.M.E. and Non-Code), Elliptical, Flanged and Reverse Dished, Dished Only, Flared and Dished, Flanged and Shallow Dished, Flanged and Conical Dished, Flanged Hemispherical and many special types are all available from our Flanging Department. And, all types are made from steel—"Quality Controlled from Ingot to Finished Product," by specialists in Steel Making.

ALSO PRODUCERS OF CARBON AND STAINLESS CLAD STEEL PLATES • EXPANDED WELDED STEEL PIPE

WORTH STEEL COMPANY · Claymont, Delaware

PERKINS Precision Gears in Production Quantities

AT COMPETITIVE PRICES

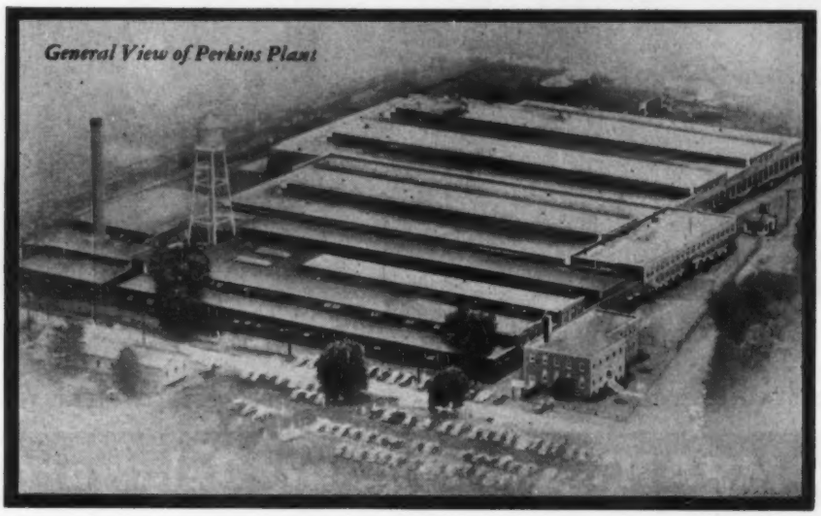
Whatever your custom gear requirements may be, here in our modern plant we have all conceivable facilities for providing practically every type of gear from any material in any size and in any quantity to your specifications at competitive prices.

Experienced engineers with a nation-wide reputation for ability in gear design and transmission problems are at the disposal of Perkins customers.

FOR SUGGESTIONS, IDEAS & COST ESTIMATES, WRITE OR PHONE US TODAY

Springfield 7-4751

PERKINS MACHINE & GEAR COMPANY
West Springfield, Massachusetts



NEW

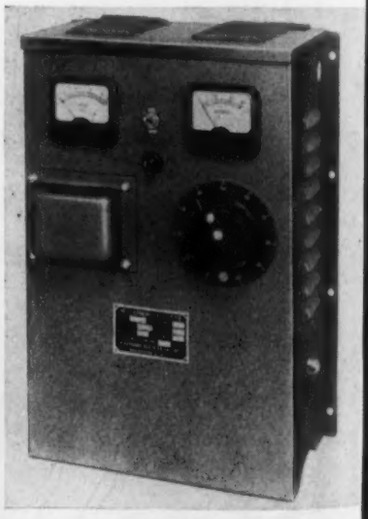
PRODUCTION IDEAS

Continued

a variety of chromium and nickel rolled and cast samples, showed standard deviations of 0.3 to 0.4 pct of the quantity measured. Minor constituents can also be analyzed with good precision at the same sparking. The production control quantometer utilized consists of a two-meter spectrometer, a recording console, and a multisource. *Applied Research Laboratories. For more information, check No. 39 on the postcard on p. 37.*

Plating Rectifier

The Model N30VP rectifier provides a source of dc power for small plating shops and can serve as an auxiliary power supply for special jobs in the larger shops. The rectifier provides continuously variable voltage from 0 to 8 v by means of a powerstat variable voltage transformer. Full-wave rectification is provided by heavy duty selenium rectifier stacks. A voltmeter and ammeter on the front panel indicate the dc output. The unit is self-contained, arranged for wall mounting. *Electronic Rectifier Co., Inc. For more information, check No. 40 on the postcard on p. 37.*



Resume Your Reading on Page 41

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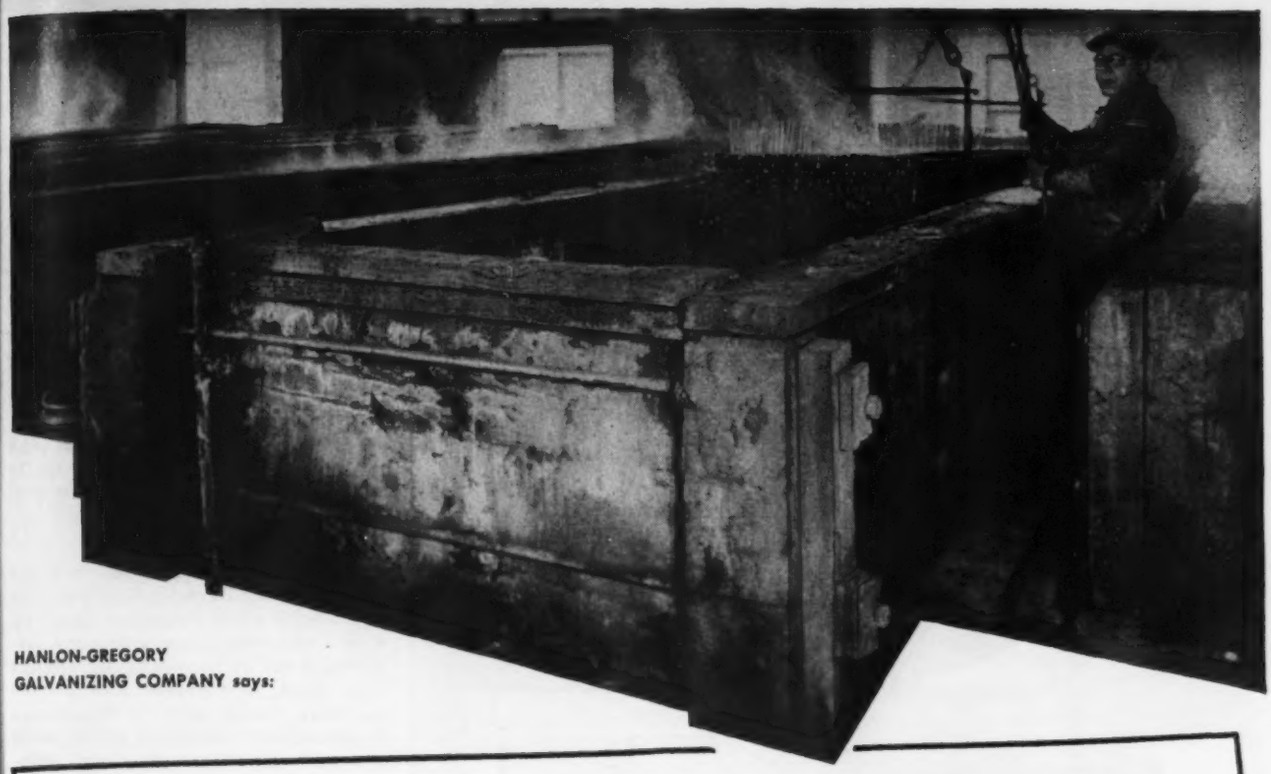


HANLON-GREGORY
GALVANIZING COMPANY says:

"For 20 years we've used nothing but Monel Tie-rods on our pickling tanks!"

The world's largest job galvanizing plant is operated by the Hanlon-Gregory Galvanizing Co., Pittsburgh, Pa.

25 years ago, this company gave Monel tie-rods a trial. As a result, tie-rods of Monel have become standard equipment, and for the last 20 years they have been used exclusively, together with corrosion-resistant Monel nuts and washers.

The Superintendent points out that the Monel tie-rods are so tough, so strong that the timber in the tanks can be very tightly bolted together. Leakage is minimized. Result: his tie-rods stay in good condition through many years of service, are able to keep his tanks tight longer.

For over 40 years, Monel has excelled in all types of pickling equipment. It is strong and ductile. It resists pickling acids better than any other commonly used material. It is easily welded.

And, of utmost importance in tie-rods, Monel is not attacked by the corrosion that eats away at an alloy with no visible warning of the reduction in strength.

*Reg. U. S. Pat. Off.

DESIGNERS and MANUFACTURERS! Sand castings and precision castings of Monel, Nickel, Inconel* and other Nickel alloys are available from Inco's own foundry.

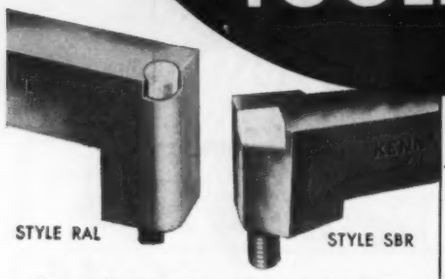
EMBLEM OF SERVICE
INCO
TRADE MARK

"PICK" MONEL *for all types of pickling equipment. In addition to tie-rods, you can have crates, baskets, chain, hairpin hooks and other pieces fabricated to your design out of economical standard mill forms. For more information on Monel and Monel fabricators, write to our Ray Reddell.*

THE INTERNATIONAL NICKEL COMPANY, INC., 67 Wall St., New York 5, N.Y.

"MONEL*" Pickling Equipment means *Extra CAPACITY...Extra LIFE...Extra SAFETY*

Saves $34,560 IN ONE YEAR with KENNAMETAL TOOLING

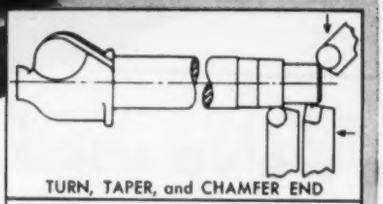


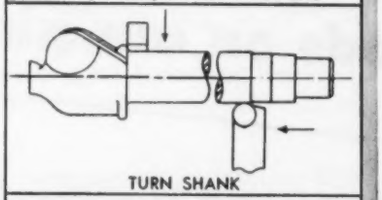
A manufacturer of automotive steering gears effected annual savings of $34,560.00 by using Kennametal tooling on just one series of machining operations.

Details of the job are given at the right —the basic tools used, Styles RAL and SBR, are illustrated above. This report indicates the enormous savings attainable through the application of modern tooling.

Here again Kennametal proves its worth. A few pennies saved in the initial cost means nothing. Consider these facts: (1) Fewer tools are required, as a rule; (2) Set-up and machine downtime are minimized; (3) Load and confusion in grinding room is reduced; (4) Higher production rates can be reached, and maintained.

Ask us to send you performance reports that show how other shops are achieving cost reduction by tooling with Kennametal.





The operations illustrated above required ten single-point brazed tools. Four Kennamatic tools are now being used. The savings on each 1000 pieces machined is $24.00, as detailed below. A total savings of $34,560.00 was realized over a 12-month period.

TOOL PERFORMANCE

	Single-Point	Kennamatic
Number Required	10	4
Cost Each (Avg.)	$2.50	$4.10
Pieces/Grind	200	1,600
Pieces/Tool Life	2,000	24,000

SHOP COST/1000 PIECES

	Single-Point	Kennamatic
Tool Cost	$15.00	$ 1.93
Productive Labor	15.12	9.32
Non-Productive Labor	6.00	0.87
Shop Cost/1000 pcs.	$36.12	$12.12

ROUGH FORGING

FINISHED

KENNAMETAL Inc.
LATROBE, PA.
MANUFACTURERS OF SUPERIOR CEMENTED CARBIDES AND CUTTING TOOLS THAT INCREASE PRODUCTIVITY

Dear Editor

MORE COMMENTS ON NEW FORMAT

(Below are excerpts of letters expressing our readers' views on the new format which was inaugurated with the Aug. 4 issue. The score is still 83 pct in favor, 5 pct no comment, and 12 pct against.—Ed.)

Sir:

The new IRON AGE has been examined with interest. I believe that any time a trade magazine comes up with a new format and a new and simplified form of providing its readers with news, it improves itself, if for no other reason than by the change of atmosphere which you get by going to a new and refreshing place. Without going into the details of the changes, I advise you that I am pleased, and that discussions with people with whom I come in contact most has brought no adverse criticism and has unearthed a number of compliments.

HARRY MOSES
President
H. C. Frick Coke Co.
Pittsburgh

Sir:

I think the changes you have made in the format are excellent. If your objective in rearranging was to facilitate finding and reading the material, it certainly has accomplished its purpose.

H. W. BECK
Air Reduction Sales Co.
New York

Sir:

I was very pleasantly surprised when I saw that you had put your material in an easy to find and easy to read form.

W. B. WEISS
Weiss Steel Co., Inc.
Chicago

Sir:

Frankly, it is my opinion that you have done an excellent job of ruining what was formerly a top notch trade magazine. Do you really have to go to such extremes to force reading of advertising material?

R. H. HERTZOG
Trenton, N. J.

Sir:

I think you have improved the new IRON AGE materially and it is certainly easier to find various articles than it was previously. Your index on p 2 and the general information

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New DESIGN . . . ENGINEERING

You Get TOP Performance from SECO Slitting Lines

New, Efficient SECO Slitting Lines are Fast, Accurate, Dependable

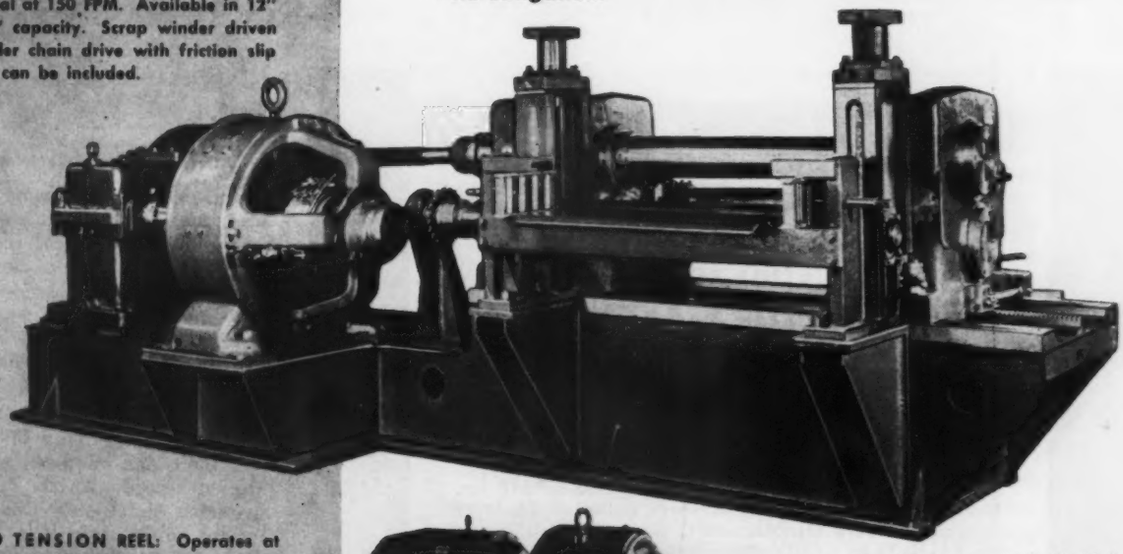
The modern design and new engineering features of SECO Slitting Lines make them outstanding in handling "tough" slitting jobs — where quality and accuracy are major factors. Fast, efficient SECO Equipment is ruggedly built for accurate, trouble-free slitting on sheet up to 72" wide, any number of cuts.

One of the revolutionary features of SECO Slitters is the completely enclosed, eccentric rotary box type arbor mountings which assure a constant pass line for any knife diameter. They are easily adjusted by a double worm gear mechanism.

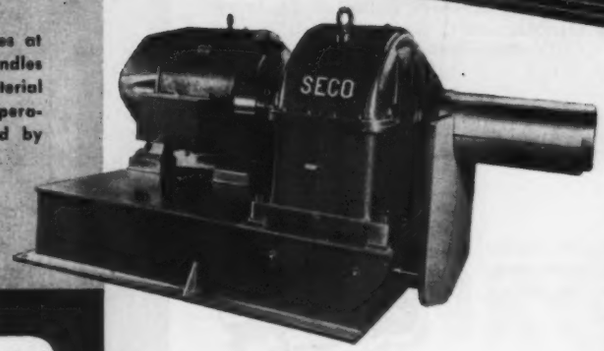
Many other superior features make SECO equipment foremost in the field. Write today for more details. Our engineers will be glad to furnish full information and operating data on request —no obligation.

SECO PAYOFF REEL: Positioning type with motor operated feed-in drive. Capacity — 5,000 to 25,000 pound coils, 30" wide. Can also be built for coils up to 72" wide. Coil lifts also available.

SECO SLITTER: 48" heavy-duty type. Handles coils weighing from 12,000 to 15,000 pounds. Makes 6 cuts in 3/16" material at 150 FPM. Available in 12" to 60" capacity. Scrap winder driven by roller chain drive with friction slip clutch can be included.



SECO TENSION REEL: Operates at speeds from 200 to 800 FPM. Handles 30" wide coils of 3/16" material weighing 7500 pounds. Efficient operation and extra power is assured by 150 HP motor drive.



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STEEL EQUIPMENT CO.

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an unusual manufacturing site for light or heavy industry

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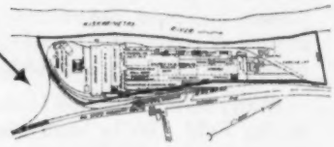

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Clark Bldg., 717 Liberty Ave., Pittsburgh 22, Pa.
Phone ATlantic 1-1621

JUST PRINTED

Two bulletins showing how NEW G-E MOTOR EXCHANGE PLAN cuts machine down time

Get the story of the new time and money saving General Electric exchange plan for Tri-Clad integral-hp motors! It's an extension of the highly successful G-E fractional-hp motor exchange plan and covers most popular types of Tri-Clad open dripproof motors—one to five hp. Bulletin GEA-5189 is for motor users; Bulletin GEA-5180 is for machinery manufacturers. Write on your letterhead FOR FREE COPY: *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

Look for this extra on the motors you buy; it means lower maintenance costs, less time lost for motor replacement.

GENERAL ELECTRIC

756-3

DEAR EDITOR

Continued

on p 3 is excellent. In all you improved the magazine a great deal.

L. A. HASTINGS
Heald Machine Co.
Worcester, Mass.

Sir:

I am in favor of the changes you have made in THE IRON AGE; they help make your fine magazine more readable. It is interesting and inviting and nicely arranged and I appreciate your attempt to give each of the editors greater credit for their work. This not only personalizes the articles but is a recognition I feel these men have earned.

DAVID F. AUSTIN
Vice-President
U. S. Steel Corp.
Pittsburgh

Sir:

I should like to compliment you on the changes in the IRON AGE. You have made your weekly presentation much more readable and at the same time more interesting.

M. W. SINGER
M. W. Singer & Co.
Pittsburgh

Sir:

I like the old index page better than the new one and also the sequence of the title pages and editorial page in the old issue.

LEONARD T. WILLISON
Manager of Sales
Jones & Laughlin Steel Corp.
Pittsburgh

Sir:

You are to be commended for the new IRON AGE format. The table of contents page is now correctly located, but I would also like to see the names of the authors of the technical articles on this page.

ELIZABETH B. FRY
Carnegie-Illinois Steel Co.
Pittsburgh

Sir:

The job of revising the format of THE IRON AGE has been well done. I was impressed with the fact that the magazine had a new look in a neat but not gaudy style.

HENRY A. ROEMER, JR.
Vice-president
Sharon Steel Corp.
Sharon, Pa.

Sir:

The new makeup of your magazine is a great improvement. You have made it much easier to read and generally livened up the entire publication. I personally like the feature "IRON AGE Introduces."

FRANK A. BURNS
Columbia Steel Co.
Los Angeles

Sir:

Your setup is very much improved and I know it will give people who de-

Turn to Page 156

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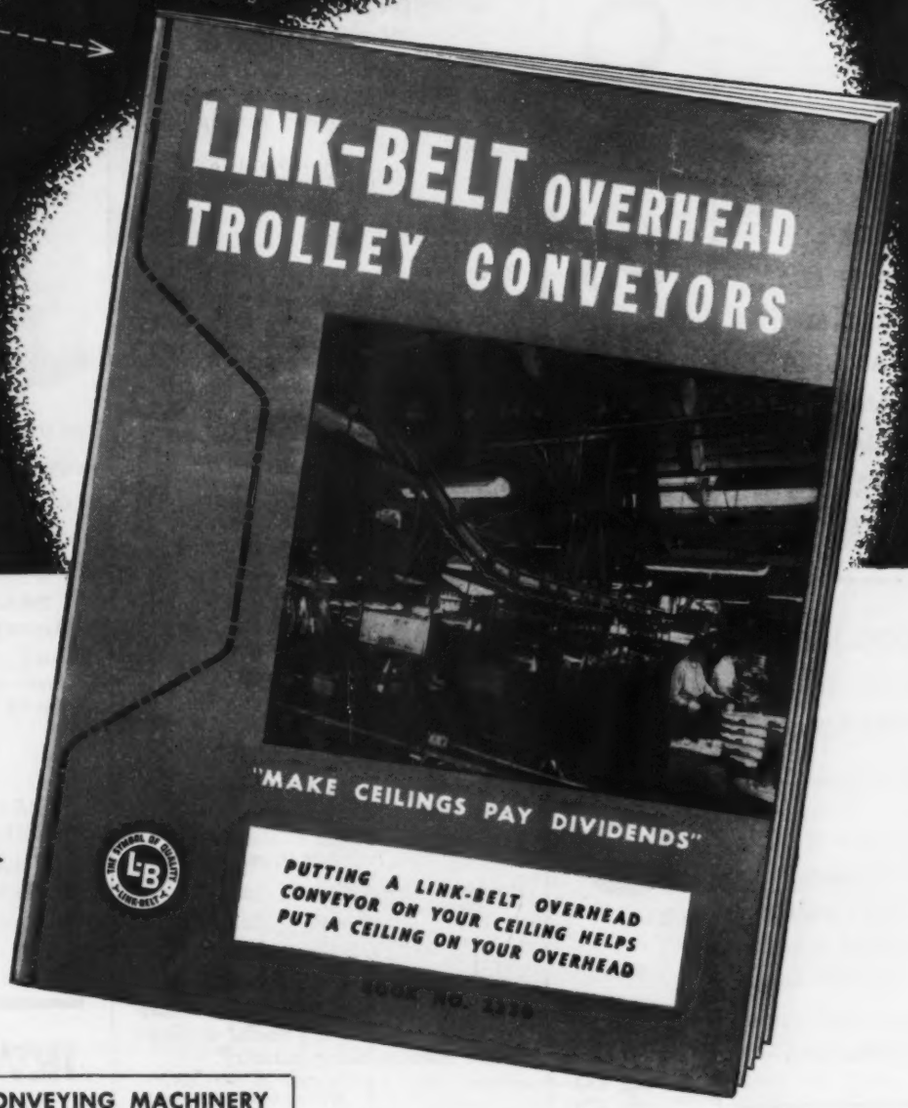
THIS BOOK
tells you how to use overhead *to reduce overhead*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May we send you Book 2330?

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DEAR EDITOR

Continued from p. 152

pend upon your periodical the maximum amount of information with the minimum amount of effort. Too many magazines spoil their overall articles by not presenting them in the proper manner. In this connection, you have done a remarkable job. Congratulations are in order.

JOSEPH T. SOMERS
President
Wyckoff Steel Co.
Pittsburgh

Sir:

Having perused the new IRON AGE, this is to say that we think the new makeup is very good. Now that the signatures of your staff have been made public, where do they bank and how do we go about getting some blank checks.

DAVE ANSBORO
Bureau of Foreign & Domestic Commerce
Dept. of Commerce
Washington

Sir:

I should like to take this opportunity to extend to you and your associates my compliments on the significant improvements you have made in your publication. There is no doubt that it will prove to be a much more valuable publication for the busy executive who likes to get his information in capsule form, or something closely resembling that, in these hurried times.

CHARLES L. WYNDHAM
Pittsburgh

Sir:

I am very disappointed in the changes you have made. The magazine is much harder to read and is very confusing. I don't like to have to hunt for reading matter. Your former arrangement was much easier to read. I have had no favorable comments from others with whom I have discussed the matter.

PERRIN G. MARCH III
President
Cincinnati Shaper Co.
Cincinnati

Sir:

Congratulations on the fine revision job you have done. The new setup will certainly be very useful to those in the metalworking industry.

KEMP G. FULLER
Manager of Marketing
Chase Brass & Copper Co.
Waterbury, Conn.

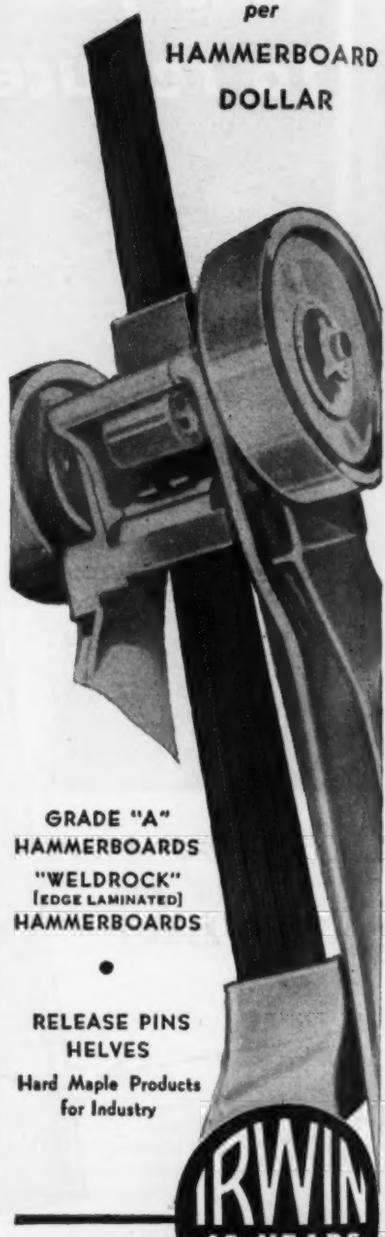
Sir:

Like most of your readers, I am having trouble adjusting myself to the new format, but I am sure I am going to like it better than the one which preceded it. Keep up the good work.

JOHN G. MAPES
Executive vice-president
Hill & Knowlton, Inc.
New York

IRWIN
HAMMERBOARDS

MORE FORGINGS
per
HAMMERBOARD
DOLLAR



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Hard Maple Products
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49 YEARS
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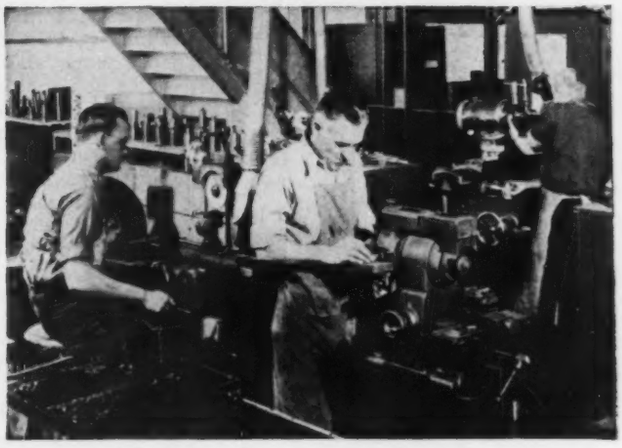
Carboloy "Triple C" Plan pays dividends at New Britain-Gridley

Coordination of carbide tool design and application at New Britain-Gridley, brought about through the "Triple C" Plan, keeps machine down-time at a new low. On this draw-boring application, for example, all carbide-tipped tools are pre-set in cat heads to exact dimensions. For various sized bores, operator merely changes heads on arbor, and has no tool setting to do.



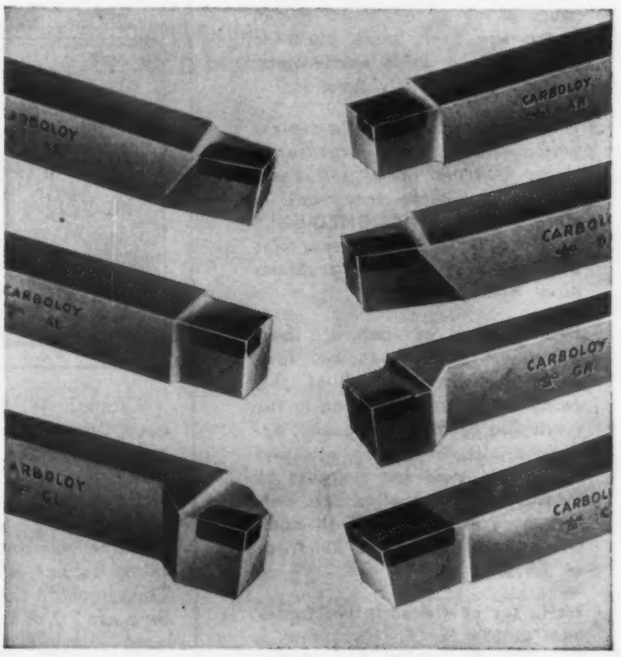
The centralized grinding phase of Carboloy's "Triple C" Plan at New Britain-Gridley resulted in an almost-overnight one-third drop in tool breakage. Carbide-tipped cutting tools are employed on a majority of cutting, facing and boring operations, and have helped lower manufacturing costs, increase production and reduce tool replacement costs.

The New Britain-Gridley Machine Division of the New Britain Machine Co. slashed new tooling costs *by one-third* since the adoption of a plant-wide Coordinated Carbide Control Plan. Read what it has done for them and what it can do for you.

COORDINATION of all phases of carbide tool use within the plant, under the direction of a carbide supervisor, is helping New Britain-Gridley lower its break-even point, a factor of concern to all manufacturers.

Under this unique coordinated carbide control plan, the design, maintenance and application of carbide tools are standardized wherever possible. This standardization, applying to about 95% of all single-point machining operations at New Britain-Gridley, speeds up application of tools on the job, keeps engineering costs at a minimum and simplifies the purchase of cutting tools on an economical, scheduled basis.

Why not investigate and find out how "Triple C" can fit into your production operations . . . bringing you amazing savings in time and costs while increasing your production and profits?



"Triple C" tool standardization allowed over 95% of New Britain-Gridley's turning, boring and facing work to be done by only twenty-nine standard carbide-tipped tools, some of which are shown here.

CARBOLOY COMPANY, INC.
11153 E. 8 Mile Blvd., Detroit 32, Michigan

COORDINATED CARBIDE CONTROL
THE CARBOLOY "TRIPLE C" PLAN
FOR EVEN GREATER SAVINGS WITH CARBIDES

CARBOLOY®
CEMENTED CARBIDE

250,000,000

. . . that is the total fuel oil gallonage treated in 16 months with

HOUGHTO-SOLV

to end sludge problems

That's a lot of oil. And it represents a lot of dissolved sludge which has been made burnable by putting it into solution and getting extra BTU's from it.

That sludge used to be a useless waste and an extra expense to clean it from tanks and lines. But by a simple treatment, a mere adding of HOUGHTO-SOLV to the tank in small proportions at low cost, sludge problems have been solved.

Improvement of nature's best petroleum derivatives has long been a major project of this company. It has pioneered in the fortifying of lubricating oils, hydraulic oils, quenching oils and Diesel oils. And for the past 16 months it has supplied this better, more effective fuel oil additive, which has helped hundreds of users.

Write for new descriptive folder and prices. E. F. Houghton & Co., 303 W. Lehigh Ave., Phila. 33, Pa.

HOUGHTON'S
HOUGHTO-SOLV
THE FUEL OIL ADDITIVE THAT MAKES SLUDGE BURNABLE

FATIGUE CRACKS

Continued from Page 22

Dr. Splint, the Park Ave. physician. The best anaptronym we have run across lately is Robert M. Black, president of White Motor Co.

The indefatigable Charles C. Finn, our aptronym detective in the vital statistics department, notes the approaching wedding in Seattle of Thomas G. Fox and Anna V. Giese. Page Aesop!

He also sends proof that a young lady named Wanda Kiddle is on the bride-to-be list. We didn't quite get this one for a moment until we followed Finn's suggestion that we say it over to ourselves softly a few times. Then we had to agree, from the standpoint of pure assonance alone, it was an ideal aptronym for a bride.

THE BULL

There is no rest for the Bull of the Woods. Vindicated on every count as to technical accuracy so far, J. R. Williams is probably the only popular cartoonist who must account to the engineering department as well as the funny bone.

THE BULL OF THE WOODS
BY J. R. WILLIAMS
MY, MY, TANSIES, YOU ONLY BEEN ON THIS DRILL PRESS THREE DAYS AND DRILLED ALL THEM HOLES IN THAT NEW TABLE?
I KNEW IT! I SAID SO WHEN THEY PUT ME ON HERE— I'M ASKIN' TO BE TAKEN RIGHT OFF OF IT!
OL' TANSIE MADE 'EM COUNT ALL TH' HOLES BEFORE HE'D GO ON THAT OLD MACHINE! IF HE HADN'T SAID A THING NOBODY'D HAVE THOUGHT OF IT!
THE VISITORS

Kenneth W. Buckley, tool engineer, Puget Sound Naval Shipyard, has one of the drill press series under test.

"I thought (and I've been close to some drill presses) that this machine was an upright drill. Certainly it has a box type column. Then how did those holes get where they are? Are the spindle bearings loose? I'm worried!"

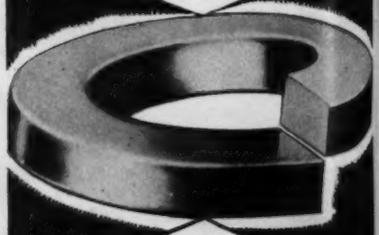
AMONG THE AUTHORS

Herbert Clark Hoover still is listed as a current author in a 1949 technical book catalog. Title of his long-time best seller: "Principles of Mining," published in 1909.

Prof. Walter C. Reckless of Ohio State University is author of a tome entitled "Criminal Behavior" and co-author of "Juvenile Delinquency."

Resume Your Reading on Page 23

CONSTANT POWER ZONE



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SPRING LOCK WASHERS
Assure Longer Lasting Assemblies

The life of the assembly is usually determined by the length of the Power Zone of the fastening device. Diamond G Spring Lock Washers have been designed, developed and torture-tested to provide the maximum Constant Power Zone . . . longer positive holding power.

WASHER FOR EVERY NEED

Whatever your needs in spring lock washers, there's a Diamond G to answer it—high carbon steel, bronze, aluminum, stainless steel and monel metal spring lock washers finished or plated with cadmium, nickel, brass, copper or other finishes . . . *plus the new Diamond G Aluminum* Spring Lock Washer that combines lightness of aluminum with the strength and durability of steel.

Garrett also manufacturers a complete line of flat washers, spring washers, springings, hose clamps, snap and retainer rings.

Write for your free copy of the technical booklet "Small Parts For Better Production."

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Manufactured by
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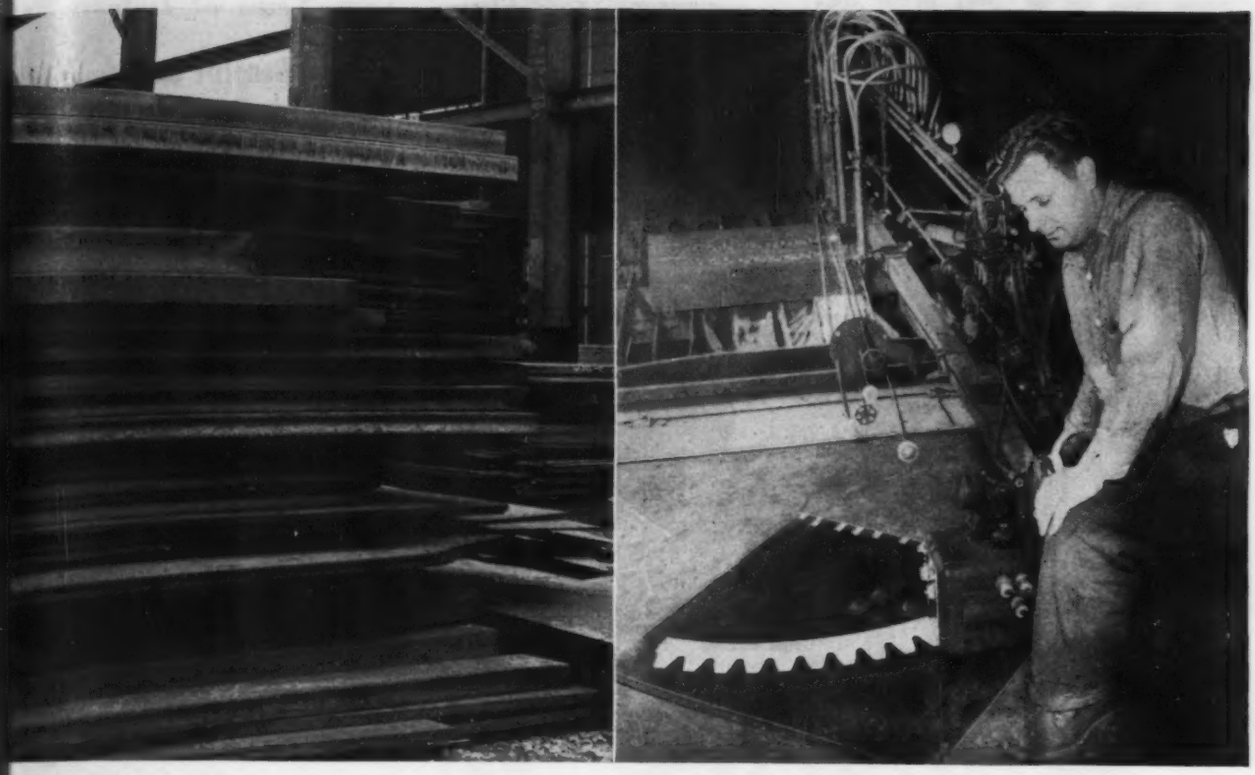

Prompt shipment from stock

. . . STEEL PLATE UP TO 15″ THICK CUT TO YOUR SPECIFICATIONS

This new service now makes steel plate in thicknesses from ½″ to 15″ immediately available from stock at By-Products Steel Co. Included is a complete line of heavy carbon steel plates in special qualities, 55,000 to 65,000 and 70,000 to 82,000 psi tensile strength.

This stock is regularly maintained to assure you of a ready source for steel plate and shapes at all times.

Plates can be shipped full size or accurately flame-cut to the dimensions or shape you specify. You avoid having to carry an extensive stock of less-often-used thicknesses and qualities. Handling costs and scrap losses are less, because only the metal you need is shipped to you.

The new Bulletin 183 shows our stock of heavy steel plate. For a copy, write By-Products Steel Co., Division of Lukens Steel Company, 413 Strode Avenue, Coatesville, Pennsylvania.

"STEEL SHAPES FOR INDUSTRY", a 16mm motion picture in sound and color showing flame-cutting, bending, shearing, pressing, blanking and otherwise forming steel plate shapes, is available without charge. Running time: 20 minutes. Write for a booking date.

Come see us at the Metal Show in Cleveland, October 17-21, Booth 503.

LUKENS
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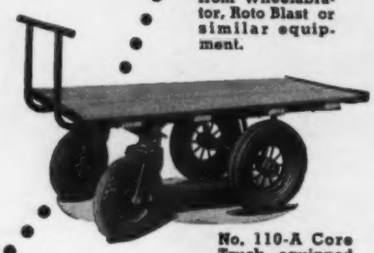
STEEL PLATE SHAPES FLAME-CUT • SHEARED • BENT PRESSED • BLANKED • WELDED

TRUCKS for Industry!

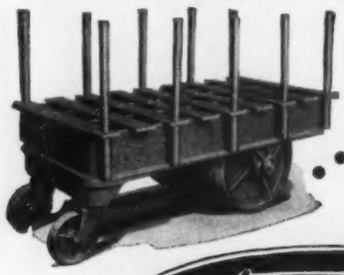
Sterling Heavy Duty Trucks are tailor-made for transporting castings, cores and heavy foundry equipment. Ruggedly constructed for heavy duty service and thoroughly job-tested under actual foundry conditions, Sterling Trucks have proven their ability to handle loads as heavy as 3 tons. Both wheels and casters are equipped with anti-friction bearings. Short turning radius. Easy maneuverability. Write for bulletins.

STERLING WHEELBARROW CO.
MILWAUKEE 14, WIS., U. S. A.

No. 160 Truck to receive castings from Wheelabrator, Roto Blast or similar equipment.



No. 110-A Core Truck equipped with pneumatic-tired wheels and ball bearing swivel casters.



No. 150 "Atlas" all-welded steel truck for transporting extra heavy loads. Low platform. Sturdy 1" pipe stakes.

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FOUNDRY EQUIPMENT

Don't Overlook Savings From Yard Efficiency With

ROUSTABOUT CRANES

The fast tractor-footed load hustlers

● Rugged, maneuverable, the answer to efficient yard organization—make those wide open spaces pay! Winter and summer, indoors but especially out, versatile Roustabouts make 2 men a whole crew, keep things moving, avoid costly delays. Wheel or crawler type, hook or magnet loads to 7½ tons, built for years of overwork. Make your yard contribute to profits, too . . . write for the money-saving facts, today!

Write to Dept. D-5

HUGHES-KEENAN CORPORATION
DELAWARE, OHIO, U. S. A.
Load-Handling Specialists since 1904

Fringe Benefits Exceed Dividends Paid Stockholders

Chicago—Fringe benefits paid by 167 Chicago companies have just been cataloged in a survey by the Employers Assn. of Chicago. These companies employing 152,581 production workers paid 11.62 pct of their payroll for such benefits last year. These benefits include vacations, rest periods, washup time, pensions and others, and amounted to $60,069,353 compared with the total payroll of $516,846,545. The same companies reported that dividend payments of stockholders were 7.52 pct of payroll costs.

George J. Hostetter, executive vice-president of the association, said that industry has failed in not keeping its employees posted on the costs of such items. He went on to say, "One of the most pressing questions confronting management today, is the tremendous sums paid out in socalled fringe benefits for time not worked."

Items which the employer is compelled to pay by law are not included in the survey. It includes only such benefits as employers have granted voluntarily to their employees. The most costly items were profit sharing and pension plans averaging 4 and 3.32 pct respectively of total payroll costs. The cost of rest periods exceed vacation pay by 0.28 pct. Rest period amounted to an average of 2.86 pct of the payroll.

GM Sets Dollar Sales Record

Detroit—Net sales of General Motors products totaled $1,595,349,652 for the second quarter and $2,877,674,126 for the first 6 months of 1949. Dollar sales for the second quarter were the largest for any quarter in the company's history.

Sales of GM motor vehicles produced in U. S. and Canadian factories during the quarter totaled 791,596 units, a new record.

Net income for the second quarter of 1949 was $166,915,305. This compared with net income of $110,282,260 for the second quarter of 1948.

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Foundry Group Expands Its Industry Educational Program

Cleveland—Foundry Educational Foundation, which conducts a college level educational program for the foundry industry in seven colleges, will expand its program to include five more engineering schools beginning in May 1950, according to its president, Stowell C. Wasson, general manager of National Malleable & Steel Castings Co., in Chicago.

To carry the expanded program for 1950, 1951 and 1952, the foundation will ask $400,000 from the foundry industry in a campaign which will get under way on Oct. 1 under the general chairmanship of Homer T. Tielke, vice-president, Crucible Steel Casting Co., Cleveland.

Dividends Reported Up 10 Pct

Washington—Publicly reported cash dividends (about 60 pct of total) in June amounted to $826 million, to bring the second quarter total to $1,493,000, roughly 10 pct more than for the 1948 second quarter.

Manufacturing, trade, finance and utilities all registered increases while mining, railroads and other transportation showed decreases, according to the Office of Business Economics.

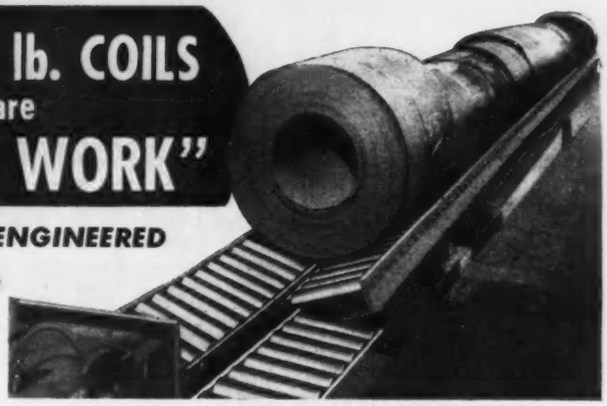
Within manufacturing, reported increases were substantial within the steel and automobile industries. Steel dividends increased from $74 million for second quarter 1948 to $106 million for 1949. For automobiles, the figures were $63.5 million last year and $90 million for 1949.

Spectographers Plan Meeting

New York—The October meeting of the Society for Applied Spectroscopy will be held Oct. 4 at 8 p. m. in the Socony Vacuum Training Center, 63 Park Row, New York. Prof. Ralph H. Muller of New York University will discuss instrumental methods of analysis.

30,000 lb. COILS are "LIGHT WORK"

—with an A-F ENGINEERED CONVEYING SYSTEM



COILS OF COLD ROLLED STEEL—weighing as much as 30,000 pounds—are a real test of the strength and durability of any conveying equipment. But they are "light work" to A-F Conveying Equipment. Here in a leading eastern mill an A-F Engineered Completely Co-ordinated Conveying System includes an automatic tilter which discharges the coils from the conveyor. Many other features in this A-F Conveying System lighten the work of stacking and distributing sheets throughout the mill.

Since 1901, Alvey-Ferguson Engineers have helped thousands of plants to make worth-while economies in handling materials and products. May we discuss modern conveyorized methods with you? Write, without obligation—today.

THE ALVEY-FERGUSON CO.
559 Disney Street Cincinnati 9, Ohio
Established 1901
Offices or Representatives in Principal Cities

CONVEYING EQUIPMENT
Alvey-Ferguson
WASHING MACHINES FOR INDUSTRY

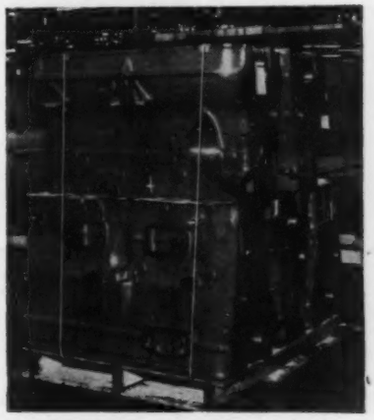
It costs less...It saves time and labor...
It gives unrivalled protection...
GERRARD ROUND STEEL STRAPPING

● Gerrard Steel Strapping costs 30% to 50% less than any other metal reinforcement.

Gerrard tying procedures are simple and rapid. Every Gerrard machine tensions the strapping, forms its own twisted seal, trimmed smooth with no exposed ends. Separate seals are not needed.

Crates, cartons, palletized loads, and carload lots of steel pipe, sheets and machinery are bound into rigid units.

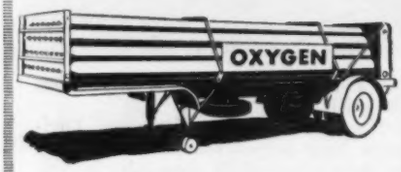
Take advantage of the technical knowledge and experience of Gerrard engineers to help solve your packaging problems. Their services are available free of charge. Write for free copy of *Blue Book of Packaging.*



Diesel engine crankcases are palletized for interplant movement. Load weighs 3800 lbs., is firmly secured to the pallet by two Gerrard Steel Straps. Photo courtesy International Harvester Company, Industrial Power Division.

GERRARD STEEL STRAPPING COMPANY
(Formerly The Gerrard Company, Inc.)
4705 So. Richmond St., Chicago
UNITED STATES STEEL

WHO PAYS THE FREIGHT?



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Fatal Accidents Declined 32 Pct in Nation's Coal Mines

Washington—Fatal accidents in the nation's bituminous-coal and anthracite mines declined 32 pct during the first 6 months of 1949 compared with the first 6 months of 1948, and were 48 pct below the total during a similar period in 1947, according to records of the Bureau of Mines.

Based on coal tonnage, the tentative fatality rate for the first half of this year reached a low of 1.21 deaths per million tons of coal, compared with a rate of 1.55 in the first half of 1948, and 1.84 in the first half of 1947. Coal production during each of these periods was 275,995,000 tons in 1949; 314,696,000 tons in 1948; and 344,767,000 tons in 1947.

Bureau figures show that 333 miners were fatally injured in January-June this year, 487 in 1948, and 634 in 1947.

No major disaster—one in which five or more men lost their lives—has occurred in the nation's coal mines during the first half of 1949. Two, killing a total of 14 men, occurred in the first six months of 1948. Bureau statistical records dating from 1839 show relatively few long periods of time when no major disasters have been reported.

Currently, coal mines are approaching the second largest of such periods with the absence of major disasters, the most recent one occurring on Nov. 4, 1948, claiming five lives. The only two longer periods in which the mines had no disasters were for 12½ months between July 1, 1938 and July 14, 1939, and for about 9 months between Apr. 18, 1946 and Jan. 15, 1947.

Revere Net Down 46 Pct

New York—Net earnings of Revere Copper & Brass, Inc. for the 6 months ended June 30, totaled $1,791,590.46, equal after preferred stock dividend, to $1.21 per share on each of the 1,286,916 common shares outstanding, against $3,274,962.37 or $2.36 a share for the same period last year.

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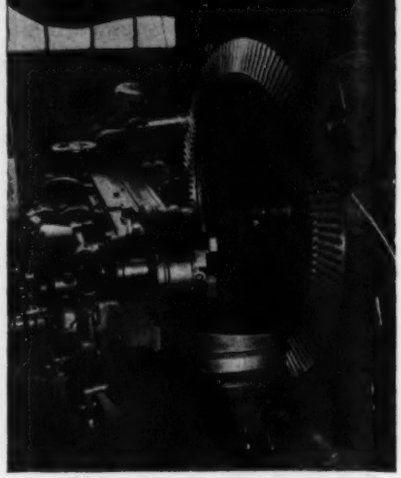

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Steel Leaders Tell Senate They Fear Labor Monopoly

Colvin, Moreell and Sawyer discuss effects of union power in industry.

Washington—Three steel producers told a Senate committee recently that unions must be shorn of their power if the industry is to escape total domination by a labor monopoly.

The present tendency toward compulsory arbitration of disputes, together with union insistence that smaller companies follow the wage patterns set by larger firms, will eventually result in totalitarian control of the steel industry by labor, they argued.

Their prediction was made to the Senate Banking Committee inquiring into labor monopolies by Ben Moreell, head of Jones & Laughlin Steel Corp.; Luke Sawyer, executive vice-president, Babcock & Wilcox Tube Co., and W. H. Colvin, Jr., president, Crucible Steel Co. of America.

The committee is trying to determine the extent to which certain labor unions have been able to gain almost complete domination in certain industries, particularly in steel and coal.

Fears a Controlled Economy

Admiral Moreell declared that labor, management, and the public should all resist compulsory arbitration because "all will suffer from its effects." The trouble with compulsory arbitration, he stated, is that it substitutes "the judgment of outsiders — so-called experts — for the free play of economic forces. Compulsory arbitration of wages will lead to control of prices, then of production, and then to the controlled—and weak — economy," he predicted.

Mr. Sawyer criticized the United Steelworkers of America for its failure to differentiate in bargaining between "big steel" and "little steel." "The union has, in effect, told us that if we wanted to close with them ahead of 'big steel' we could do so only by accepting all of their demands against 'big steel' . . . I can only observe that it is a certain road to monopoly," he commented.

Here's the *Proof* of Preference for WISCONSIN HEAVY-DUTY *Air-Cooled* ENGINES

4 Out of 10 Carburetor Type Engines made in 1947 in 2 to 30 H.P. Range were WISCONSINS!

According to an official bulletin issued on April, 22, 1949 by The Bureau of Census, Dept. of Commerce (Preliminary Industry Report, Series MC-31D, covering the production of Internal Combustion Engines for the year 1947) 40.2% of all carburetor type engines within a cu. in. displacement range from 11.0 to 175.9 were Wisconsin Air-Cooled Engines.

The summary includes data received by the Census Bureau from 134 engine manufacturers. The tabulation of the 9 groups within the above displacement range, does not include automotive, aircraft, and outboard marine engines, built for resale as separate power units or engines for use as original equipment by manufacturers.

These figures speak for themselves . . . in terms of outstanding preference for Wisconsin Air-Cooled Engines among power users in all fields.

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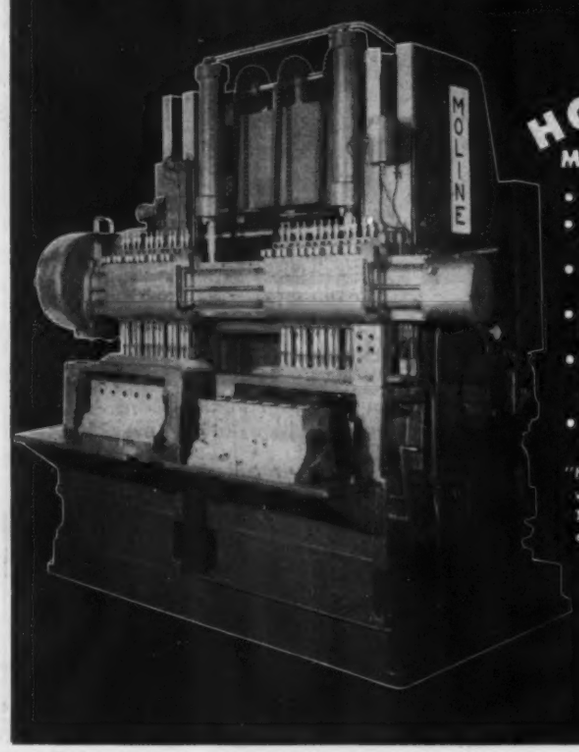

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• *News of Industry* •

GIFS to Exhibit at Metal Show

Cleveland—Gray Iron Founders' Society board of directors have authorized a society exhibit at the National Metal Exposition to be held in Cleveland, Oct. 17-21, 1949. This is the first time in the history of all Metal Shows that any trade association in the foundry field has been represented. The project is part of the society's long-range program designed to acquaint engineers and metallurgists with the useful properties of gray iron.

Permanente Profits Rise

Oakland, Calif.—Net sales of $73,669,182 for aluminum, chemicals and refractories are reported by Permanente Metals Corp. for its fiscal year ended May 31. This is an increase of 19.6 pct over the previous year. Net earnings increased 30.1 pct to $12,023,374 and working capital more than doubled to $25,089,000. According to the report, Permanente now produces 20 pct of the nation's primary aluminum.

Permanente currently employs 4000 persons, and its two reduction plants have a capacity of 257,500,000 lb annually. Products are marketed through Permanente Products Co., wholly owned subsidiary, with 26 sales offices.

Studies Ferroalloy Production

Washington — Henrik Steffens Hagerup-Jenssen, Norwegian metallurgical engineer, has arrived here for a month's study of American methods of ferroalloy production.

He will study processes and developments at the Bureau of Mines and various technical colleges. Later he will inspect practices at plants of U. S. Steel Corp., Westinghouse and General Electric Cos.

He has been associated with A/S Bjolvefossen, Aalvik, Hardanger, for the past 15 years. In view of his firm's expansion plans, Mr. Hagerup-Jenssen will also study the newest types of furnace construction while here.

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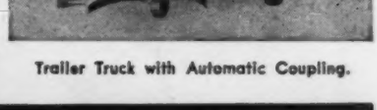

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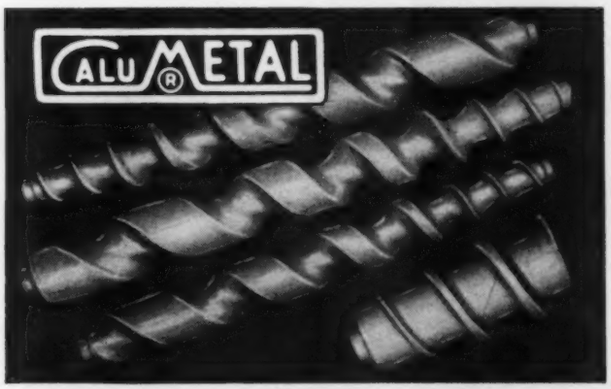

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GLOBAL LETTER
REVIEW OF WORLD MARKETS

Continued from Page 30

mechanization not only has technical advantages, but it also permits easier working of manpower. It gives workers opportunities for jobs more to their liking. Engineering missions which have visited the United States are in agreement with this point of view.

The new program of modernization raises particularly hard problems for iron ore mines in the Lorrain basin. Funds previously provided for this purpose have proven insufficient. It is estimated that 15 billion francs will be needed before the job is finished. Delay in obtaining inclusion of these expenses in the Marshall Plan may have a restrictive effect on the iron ore supply.

Deliveries Have Increased

Deliveries in 1948 reached 25,230,396 tons. Of this, 16,508,639 tons were for home supply. This compares with 11,937,380 tons in 1947. The rates of deliveries for export and home market have increased in the same proportion, respectively 35 pct and 34 pct. But stocks which amounted to 8,255,379 tons at the end of 1947 declined to 6,022,392 tons at the end of 1948.

Total production in 1948 amounted to 23,030,756 tons compared with 33,045,607 tons in 1938 and the peak level of 48,065,822 tons in 1929. Since the beginning of this year the output has been maintained at about 2,550,000 per month and is still under the level of 1938.

Costs Still Increasing

Costs are continuing to rise, mostly as a result of wage and salary increases. Social charges in particular have increased. These amounted to 45 pct in 1947. In 1948 they climbed to 60 pct of salaries. These social charges include outside social security expenses, allocations for rent and transport, bonus for heating, and family allowances, which have advanced from 14 to 19 pct.

Warns Against Wage Increases

London—Steelworkers have been told by one of their own leaders in no uncertain terms that prices can't be kept down if the trade unions

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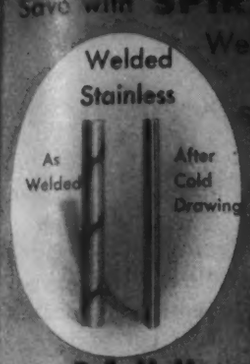

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See also Adv. on page 74 Feb. 3 Iron Age

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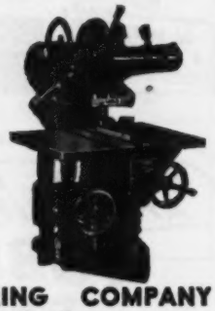

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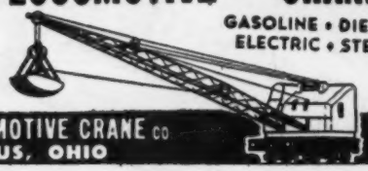

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GLOBAL LETTER

Continued from Page 170

keep pushing them up by pressing for higher wages.

Mr. Lincoln Evans, general secretary of the Steelworkers' Union, says: "It has been argued that wage increases may be gotten without increasing prices by taking them out of profits. This may be true in certain cases. But over the range of industry, after taxation, this field is very limited. In any event, the wage increases it would yield would be sniffed at by many who think that by abolishing profit we could find the answer to all wage demands. Any general increase in wages, unless these are the result of increased productivity, can only come out of increased prices."

Applies for World Bank Loan

Belgrade—A World Bank mission is investigating Yugoslavia's needs for a loan. It is expected that the mission will need about a month to complete its work. Yugoslavia has applied for a loan, but nothing has been said about the amount or specific projects.

The present mission will make a general survey including economic and financial conditions. It is expected that Yugoslavia will ask for funds to buy mining equipment for replacement and for use in developing new mines.

Producing High Purity Aluminum

Oslo—Aluminum of 99.996 pct purity now is being produced experimentally at the Vigeland Aluminum Plant in Norway. The company has installed 38 units, said to be capable of a total annual production of 1500 tons of this high purity metal.

Basic Prices of Rails Increased

Paris—Basic prices of rails have been increased from 21,960 francs to 23,280 francs per metric ton by an order of Aug. 12. At the same time extra prices were also advanced.

Zagreb Fair Opens This Month

Belgrade—Yugoslavia's all-out effort to increase foreign trade will be reflected in a 75 pct expansion in exhibitor's space at the annual Zagreb International Fair. This is a centuries-old exposition which opens for 2 weeks, Sept. 17. The 1948 fair was attended by 307,000 persons.

Resume Your Reading on Page 31